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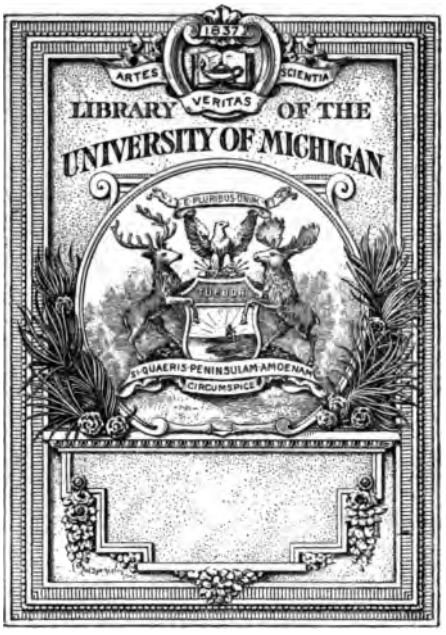

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TRANSACTIONS

OF THE

MINNESOTA

State Medical Society

1888.

ST. PAUL:
H. M. SMYTH PRINTING CO.
1888.

OFFICERS OF THE SOCIETY.

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C. A. WHEATON, M. D.

FIRST VICE-PRESIDENT:

R. D. BARBER, M. D.

SECOND VICE-PRESIDENT:

H. H. WILCOX, M. D.

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TREASURER:

S. B. SHEARDOWN, M. D.

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CORRESPONDING SECRETARY:

C. E. ATKINSON, M. D.

CENSORS:

FOR THREE YEARS—S. C. McCORMICK, M. D.
G. F. FRENCH, M. D.

FOR TWO YEARS— J. C. RHODES, M. D.
V. SMITH, M. D.

FOR ONE YEAR— R. S. McMURDY, M. D.
A. W. STINCHFIELD, M. D.

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PROCEEDINGS

OF THE

TWENTIETH ANNUAL MEETING

OF THE

Minnesota State Medical Society

The Society met at 10 A. M., Thursday, June 21st, 1888, in the Chamber of the House of Representatives at St. Paul, the President in the chair.

The session was opened with prayer by the Rev. C. D. Andrews of St. Paul.

Mayor Smith welcomed the members heartily and briefly, and tendered them the freedom of the city.

Drs. W. W. Mayo, Millard and Emory were appointed the committee on new members.

The committee on nominations of chairmen of sections was appointed as follows: Drs. Hunter, J. E. Moore, Boardman, Riggs, Lincoln, A. F. Ritchie, Young, Wedge, C. E. Rogers, Munger and Barber.

Dr. Senkler, the Chairman of the Executive Committee, presented to the Society the programme for the work of sections. He also extended to the members an invitation from the Ramsey County Medical Society to attend a

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banquet at the Hotel Ryan in the evening, and invitations from Drs. Stone, Fulton and Wheaton for receptions on Friday evening.

After listening to the President's address, the general session was adjourned to meet again in the evening. The afternoon was occupied with section work.

THURSDAY EVENING.

The Society met at 7:30 P. M., the President in the chair.

Dr. Beard read a paper on "Electricity as a Life Destroyer," advocating the use of the electric current in the infliction of the death penalty. The paper was illustrated by two experiments on dogs. Death was produced quickly and with little pain (probably with none in the first experiment). The failure to produce instantaneous and painless death was undoubtedly due to the fact that the current had not more than one-tenth the intensity that was expected and that had been promised.

The paper and the general question of methods of inflicting capital punishment was discussed by Drs. Boardman, French, Murphy, A. J. Stone, W. W. Mayo. and the Rev. Dr. S. G. Smith.

Dr. Millard introduced a resolution appointing a committee of the Society to investigate the methods of capital punishment, with the view of influencing legislation on the subject.

Dr. Hunter offered an amendment to Dr. Millard's resolution appropriating $200 for the committee's expenses. Amendment lost by a vote of 9 to 21.

Dr. Allport moved as an amendment that the sum of $100 be appropriated for the expenses of the committee. Amendment lost by a vote of 14 to 16.

After discussion, Dr. Millard's resolution was, on motion, laid on the table. General session adjourned till Friday morning.

FRIDAY.

The Society met at 10 A. M., the President in the chair.

The committee on new members reported, and the gentlemen recommended were elected members of the Society. [Their names will be found in italics in the roster at the back of this volume.]

The committee on nominations of chairmen of sections reported the following names, and the nominations were confirmed by vote of the Society.

Practice of Medicine—E. J. Abbott.
Surgery—W. W. Mayo.
Obstetrics—A. B. Cates.
Gynæcology—P. E. Jones.
Epidemics, Climatology and State Medicine—A. B. Ancker.
Diseases of Children—M. Sullivan.
Nervous Diseases—Lizzie R. Wass.
Materia Medica—S. M. Stocker.
Ophthalmology and Otology—E. S. Wood.
Medical Jurisprudence—R. L. Moore.
Orthopœdic Surgery—J. E. Moore.
Medical Education—E. Y. Chilton.
Pathology—J. Clark Stewart.

The Society then proceeded to the election of officers. The result is shown on page 2 of this volume, the elections in all cases being unanimous.

On motion of Dr. S. B. Sheardown, the sum of $25 was unanimously voted by the Society to partially reimburse Dr. Beard for expenses incurred in his experiments.

The general session then adjourned, to meet in Minneapolis on the Third Thursday of June, 1889.

The following appointments have been made by the President since the meeting of the Society:

Executive Committee.

F. A. Dunsmoor, Chairman.

C. H. Hunter, C. L. Wells.

Committee on Finance.

B. J. Merrill, Chairman.

J. T. Moore, W. H. Pratt,
Thos. McDavitt, F. W. Van Slyke.

Committee on Necrology.

S. B. Sheardown, Chairman.

A. W. Giddings, W. S. Laton,
W. L. Lincoln, E. C. Spencer.

Committee on Publication.

A. E. Senkler, Chairman.

C. Williams, A. Sweeny,
S. B. Sheardown, C. B. Witherle.

Essayist—Thos. McDavitt.
Alternate—Wm. Davis.

Committee on Adjudging Prize.

E. H. Stockton, Chairman.

D. W. Hand, Franklin Staples.

Treasurer's Report.

S. B. SHEARDOWN,

In Acct. with the Minn. State Medical Society.

		Dr.
To balance on hand from 1887,		$1,123 94
Amt. for initiations and certificates,		95 00
" " annual dues, 1887,		312 00
" " delinquent dues,		98 00
		$1,628 94

	Cr.	
By paid H. M. Smyth Printing Co.,	$336 65	
" Secretary's salary,	100 00	
" American Medical Ass'n,	100 00	
" P. H. Millard, for printing,	8 50	
" A. C. Wedge, "	4 50	
" Janitor,	5 00	
" Treasurer's expenses,	26 00	
" Balance on hand,	1,048 29	
	$1,628 94	$1,628 94

St. Paul, June 22d, 1888.

S. B. SHEARDOWN, Treasurer.

NOTE.—Several papers contributed last year reached the Secretary too late for publication in the last volume of Transactions. They are published in the present volume, as follows: Essay by Dr. Allport; Reports of three Surgical Cases by Dr. Blackmer; Report on Nervous Diseases by Dr. W. A. Jones; Report of a case by Dr. A. T. Conley; Report on Ophthalmology by Dr. Spratt.

PRESIDENT'S ADDRESS.

C. F. McComb, M. D.

Gentlemen and Members of the State Medical Society:

As President of your Society I am, owing to custom heretofore established, called upon at this time to deliver to you the annual address. In establishing such custom I believe it to have been the aim of the Society to have the President's address dwell upon the important developments of the past year in the practice of medicine and modern surgery, and to treat of such other subjects as in his judgment he might see fit to bring before the Society which should to a degree at least merit their consideration.

In reviewing the list of my illustrious predecessors, and reading with interest their several efforts on like occasions, I can but regret my inability to make suggestions to this body commensurate with its advancement, upon the various professional topics which should engage our attention at this time, realizing that at such a time and before such an assemblage one should at least have something more than ordinary to present for consideration.

That there have been important advancements in the past year in the diagnosis and treatment of disease must be admitted by all who have made any attempt to keep abreast of the medical literature of the day; in that department through the efforts of physiologists, microscopists and scientific students and practitioners generally, we are enabled to diagnosticate and prescribe with more

precision and confidence as to the ultimate result to be accomplished at least in some varieties of maladies than we were a year ago. Our current literature is constantly overflowing with new discoveries in disease, new methods of diagnosis, and more than all, new remedies; and although there is a strong tendency of a certain portion of the medical profession to have constantly paramount in their minds the idea that they must accomplish something which nobody else has done, and keep their names ever before the public in order to establish reputations in their particular department or specialty so-called, by constantly writing articles more as a means of attempting to climb by degrees the ladder of fame and establish for themselves a name, than for the real merit of the undertaking, or benefit to be derived by the profession from their perusal; although there is such a tendency and many such men in our ranks, be it said to the discredit of the profession, yet from all that is written and all that is said, the result of careful study and scientific research by our ablest and most talented men and writers, we can but deduce no small amount of knowledge which merits our admiration and is worthy our close study and careful consideration.

At the present period, that the so-called Science of Medicine is in reality far from being a science, we must be frank to admit; it is our frequent experience to be confronted by varieties of disease which were not unknown to and which were treated in vain by our ancestors in the profession long before our time, and in the treatment of which to-day even in the advanced stage of medical science, we can offer very little if any more encouragement as to a favorable termination than could they a century ago. Have we to-day an efficient remedy with which to successfully battle against the ravages of pulmonary tuberculosis? Can we with any means at our command meet with any degree of hope or confidence malignant

diphtheria or scarlatina? Possibly some of the profession are sufficiently sanguine to answer in the affirmative, but I assume the vast majority not to be among that number, and yet I can but believe there is still room for confidence that we will yet be able to combat with many of the at present most fatal diseases, with no little encouragement and even a fair amount of success.

The profession has made advancement in one branch which cannot be looked upon as other than highly creditable; I refer to the department of preventive medicine; and it is due to the untiring and zealous efforts of the various State and local boards of health, that we are enabled to a great extent to prevent the spread of the most malignant forms of disease; it is a branch of medicine the furtherance of which should receive encouragement from all hands, and especially so from our State legislatures, for if we can to any degree prevent the spread of a disease which is beyond the skill of physicians to treat successfully, such means should certainly receive the undivided support of legislators and the profession generally.

In the field of surgery we can see within the past year, not to say the past few years, much advancement; in that point of view it offers to the student, the practitioner, the surgeon, much more to hope for and to successfully accomplish. It is not many years ago that abdominal surgery was looked upon as a venture most hazardous; to-day, under our strict antiseptic precautions, the peritoneum is no longer to the mind of the surgeon the vail between uncertain life and imminent death. The surgeon of the present day would consider it a procedure almost criminal to allow a patient to die from a gun-shot wound perforating the intestine without making an effort to save his patient by opening into the peritoneal cavity, seeking the site of the intestinal lesion and closing it properly by sutures. The treatment of suppurative peritonitis by means of laparotomy and frequent irrigation accompanied

by proper drainage, in the same manner that a collection of pus would be dealt with in any other locality, is also I think, highly commendable and worthy the consideration of the profession, as without such procedure in such cases death is almost inevitable.

There are many branches of both medicine and surgery, the advancement of which during the past few years can but challenge the admiration of the general profession, but to dwell to any great extent upon such progress would be simply a feeble attempt to tell you what you already know, and naturally merit very little attention or interest on the part of the Society.

During the past few years through the strenuous and untiring efforts of some of the members of our State profession, an act regulating the practice of Medicine and Surgery in Minnesota passed the State Legislature; it was a grand movement, the initial step to the advancement of medical education in our State and the elevation of the standard of professional requirements to those who are hereafter to join our ranks. The good work which has already been accomplished, the result of the passage of this act, is even now apparent, and too much credit cannot be bestowed upon the gentlemen who framed the act and fought it through to a successful issue.

It has been for years and is to-day generally conceded by the profession throughout the United States that our country is unnecessarily overrun with medical schools, and that in view of the fact that in every community there exists so much of the professional aspiration, the eager desire of not a few for academic honors, it is a constantly growing evil and difficult to suppress. It is not so much the number of medical colleges being constantly established throughout the land as it is the quality which merits condemnation; there are indeed some points in favor of a small school for the thorough preliminary education of the medical student, provided however, it be well equipped,

have every means at hand, and a thorough competent corps of instructors, didactic and clinical, even though the clinical materials may be limited. I believe the system of medical education pursued by our colleges in this country as far as it goes, to be highly commendable, but to graduate hundreds and hundreds of students every year after a course of two or three years instruction, even with the abundant clinical advantages at hand, crowded in however upon the student at a time and under circumstances which can but prevent a thorough conception of what must be grasped in that department, at a time when he is struggling to keep abreast with his lecturers, pass his examinations and quizzes, and prepare for the inevitable, the final examination; to graduate such large classes, and send them out to assume the responsibilities of professional life, without a thorough post-graduate course, exclusively clinical, I believe to be thoroughly wrong; and I hope to live to see such a course of instruction obligatory before the graduated student is granted a license to engage in the practice of his profession.

The smaller colleges whose attendance in number of students is limited, offer at least this one advantage, that although the student does not have the abundance of clinical material to command his attention and study that is offered by the over-crowded schools in our larger cities, yet from the advantages offered in that department from operative surgery to physicial diagnosis in the wards of the hospitals, he is enabled, owing to the limited number of his class, to study to better advantage each and every case, and consequently can but be given ample opportunity to comprehend with a genuine thoroughness what is so carefully imparted by his clinical teacher. The result is apparent; he graduates and goes forth to practice his profession (from the fact that what he has learned he has learned well) much better equipped than does the student who has seen more, but having seen (as it were) at a dis-

tance has but a vague idea of what he should thoroughly comprehend. It is far better and more profitable to the medical student to see and have well demonstrated one case of pneumonia or valvular heart lesion, and understand it well, than in a routine and imperfect manner to study hastily at the bed-side dozens of like cases and not be able to understand to any degree of satisfaction what is actually taking place; and the same applies to all other branches of clinical instruction; and yet we all know it is not unlikely to be the case in most of our larger colleges, where it is not an uncommon fault for the classes to be over-crowded to the extent that to impart clinical instruction in a thorough and comprehensible manner is next to impossible.

The most important step in the direction of medical education in Minnesota, which indeed has been the all-absorbing topic of conversation, discussion and interest to the profession in general throughout the State for the past few months, was the establishment by the board of regents of our State University, of a medical department in connection with that institution; it was undoubtedly to the minds of the majority of the profession an act somewhat premature, and yet in view of the fact that too many medical colleges were already in existence in the State, none of which seemed to meet with the desired success or receive sufficient encouragement to place them on a par with the requisite standard of our leading American institutions in point of thorough equipment; and reasoning from the standpoint that it was to be the initial step to the eradication of those schools and the formation of a college which in the course of time it is hoped from the endowment to be received from the State will not be lacking in any of the requisites necessary to make it the peer of any of our Eastern institutions of like character, I cannot conceive how it can be looked upon as other than a judicious move, thoroughly justifiable, and one which should

receive the unanimous approval of the profession of the State.

In selecting a faculty to represent that department, a committee of five was appointed by the board of regents which should include the president of that honorable body. It was not a pleasant task nor was it an easy one, but acting on the instructions of the regents, viz., that the selection should be from the men most competent to fill the allotted chairs, the committee made their selections accordingly as best they could. It would indeed be surprising if among the large number of gentlemen selected to fill those responsible positions, there should not be included some who (although their professional standing and ability were beyond question), after thorough trial were found to be lacking in the qualities essential to become thorough and successful instructors, and it would be still more surprising if the selection met the approbation of all. The board of regents desire it to be distinctly understood that the appointment of each and every member of that faculty is for a term of one year, and if at the end of that time there be any who do not give general satisfaction or have not demonstrated themselves to be thoroughly competent to fill their respective positions with credit to the institution, they should not consider it in any sense an indignity if requested to withdraw in favor of men in the judgment of the regents better adapted to serve as successful instructors. This action was imperative in the interest of the end in view, viz., the establishment of a department of medicine and surgery that will compare favorably with any of our Eastern institutions and reflect great credit upon our university and our State, and be a source of pride to the profession, not only of the twin cities, but of the State in general.

Let us hope then that the recent action of the regents in establishing this department, at present in its embryonic state, may eventually prove a grand success, and as

a result that in time Minnesota shall at least have one faculty of medicine which in standard of professional excellence will rival any of our Eastern colleges, and be a source of pride to us all.

In closing, gentlemen, I take this opportunity to congratulate the Society upon the good work accomplished in the past, and to impress upon the minds of all members the importance in the future of using every reasonable endeavor to assist the chairmen of the various sections, by furnishing material for their annual reports; it is not an uncommon failing for many of us to become somewhat derelict in our duties in that respect, forgetting that the advancement of the Society must be commensurate with our individual efforts to make each annual meeting one of profit and success. Let it be our aim then to encourage and maintain the unanimity, harmony and general good feeling which have ever characterized the members of this body; and as our science from year to year makes rapid progress, and we as an association presumably in proportion, we may leave behind an organization for future generations which can but command the respect and esteem of its individual members, and be a means of no little gratification to the general profession of our State for all time to come.

ESSAY.

THOUGHTS ON MEDICAL PROGRESS.

F. ALLPORT, M. D., MINNEAPOLIS, MINN.
(Professor of Clinical Ophthalmology and Otology, Minnesota State University.)

When as important and thoughtful a body of men as constitute the N. Y. Academy of Medicine see fit to set apart an entire evening for the consideration of how much actual progress has been made of late years in the practice of laryngology, it would seem entirely feasible to cry a halt and endeavor to ascertain just how great an advancement has been made in the entire scope of medicine and surgery.

Now, my professional brother, do not immediately take up arms against this apparently unwarrantable query. I think I can hear you begin to enumerate the many wonderful discoveries of the past century and ask if they must go for naught in the general account of medical stock. Far be it from me to take one leaf from the laural wreath of our great medical and surgical discoverers; but the question arises in my mind, how many of these discoveries have been really useful.

Almost with awe do I regard the great mind of Von Graefe who showed the usefulness of iridectomy in glaucoma; Helmholtz, who invented the ophthalmoscope; Garcia, who demonstrated the feasibility of examining the larynx; of Sims, who invented the speculum of speculums, and operated successfully on fistula; and all the

larger and lesser luminaries who have really illumined the dark pathway of medicine. Such discoveries as I have mentioned form an era in the history of our profession. They were then, and have ever been, of actual worth.

But with these giants appear a long line of pseudo-discoverers whose ideas spring up like a mushroom and die nearly as soon. Let not this be construed as a word against investigation. Were it not for experimentation and investigation, the world would never have known a Sims or a Billroth. I would merely raise my voice against those men who, having tried a certain remedy or surgical procedure a few times, followed by good results, immediately assume that such a remedy is a cure for phthisis or cancer, etc.

Upon the heels of this unwarrantable assumption, duty at once prompts him to rush into print, so into print he goes. He, very likely, touches up his report in certain assailable points, and, in print, his ideas look very well. So well indeed that—especialy if his name be known—others of his professional brethren are induced to try the remedy. And now if, by good luck, fortunate results ensue, they speedily send out a corroborative article and the idea spreads, or if their experiment result unpleasantly they become disgusted with medical literature in general and this article in particular.

To learn how credulous physicians are, it is only necessary to ascertain the enormous quantities that are sold of these much vaunted new remedies. It is only essential that a well known wholesale drug house shall send out a gentlemanly agent of persuasive manners and a ready vocabulary of medical terms, who can glibly explain how these extracts and these tinctures are made, and especially how much better they are made than any other house can make them, and what wonderful results this and that doctor is having with hitherto incurable diseases, to insure a large sale of a new remedy fresh from Africa

with an unpronounceable name as its possible only merit. The journals are full of descriptions of these remedies and combinations of remedies. Every physician's office is deluged with samples of the same. It is safe to assume that were there no demand for these semi-quack remedies the trade in them would soon subside, but it is certainly humiliating to observe the alacrity with which physicians seize upon and use new remedies, and the credulity with which they read the advertisements of the same.

This remedy is "good" for headache, or that remedy is "good" for neuralgia, say the nicely and semi-professionally worded advertisements, and straightway a confiding doctor tries it upon his next patient without careful investigation as to the *cause* of that disease. It may have been due to a stomach or bowel difficulty; it may have arisen from a uterine disease or possibly some error of refraction, the cure of which will be dependent upon a removal of the cause; but, regardless of causes, the new remedy is administered with the hearty wish for its success. These remedies are often of the most incompatible or "shot-gun" description, and yet—and yet they are sold, and that is all it concerns the druggist.

An instance of the decline in popularity of a remedy that was praised beyond its deserts may be found in cocaine. When this remedy first burst on the medical horizon it assumed the character of a local anæsthetic for mucous surfaces. But it soon overstepped these boundaries, and painless amputations and other extensive operations in general surgery became possible under its quieting influence. It was used in the eye as freely as water, but at last objections to cocaine were published, and a lack of uniform success seemed to have been its fate, and to-day its use is daily becoming more circumscribed, and many oculists use it most sparingly in the eye, fearing its tendency to produce degeneration of the cornea.

Similar instances might be enumerated in jequirity, anti-

pyrine, and numerous other drugs, but further argument seems unnecessary, for I think we have all observed the eagerness with which old and proven remedies are abandoned to be supplanted by that which is new and promising. Sufficient has been said, it would seem, to excite a care in publishing reports of immature ideas of theory and practice. I do not wish to be understood as saying aught against the dignity or usefulness of the physician and surgeon. I merely wish to urge the idea that we avoid this tendency to the administration of too much medicine, too little reliance upon nature, and too little diagnosis. I do not believe in too much improvement upon nature—as for instance in the habitual administration of anæsthetics in labor, and the application of drugs to the eyes of new born babes, regardless of the presence or absence of disease.

It is well to possess a spirit of investigation and progress, but unfortunate to accept at once the latest views concerning theory and practice, drugs, instruments and operations. It takes years to test the usefulness of medical and surgical procedures, and yet new ideas are usually received with open arms and old ones cast aside as old-fashioned and obsolete. Note the career of quinine—how often it has been compelled to step aside and make room for pet innovations. Ever and anon has it come again to the front and is welcomed like an old and tried friend. To-day it stands—as it has always really stood—the peer of any drug as an anti-pyretic, anti-periodic and tonic. You will find by a perusal of the history of many of our *new* remedies that they were in active use many years ago in the treatment of the same diseases for which they are now so highly recommended. To-day they will be used and lauded—in a year, and possibly less, they will be temporarily dropped and forgotten.

How can we blame our patients for yielding to the seductive claims of patent medicines or the "mind cure"

when we ourselves acknowledge ourselves captives to conquerors but a step higher in the professional scale. Every age thinks itself high in medical advancement, and would scorn any bold spirit who insinuated aught against such orthodox sentiments. Yet do we find each succeeding age in laughter as it takes a retrospective glance over the past. It is not necessary to live a hundred years to understand this. I am yet young in the profession, but I have lived to see numerous generally accepted theories and practices exploded. A few years ago most fever patients were subjected to the rigid cold bath treatment (alas! for many patients). To-day, while it is somewhat used for certain cases, a great revolution has taken place in this respect, and some physicians have embraced antipyrine—much to the disgust of others. Many believe, after all, that quinine is the great anti-pyretic, and others as learned do practically nothing but endeavor to keep the different functions in as good a condition as possible and trust to nature to cure the disease. These latter medical men—among whom may be enumerated many of the most eminent in our profession in this country—claim just as good results as those physicians who use the most modern and approved methods of treatment. If it were not for this disposition on the part of nature to cure disease without any particular assistance from physicians how could we account for the success attained by homeopaths in the treatment of disease?

I remember to have heard an eminent Chicago physician remark before a medical society that he had practiced medicine many years, and during that time seen much of homeopaths, and, humiliating as it was to acknowledge, he was compelled to say that so far as his observation went they had as good an average of recoveries as did the old school. We may answer that they use remedies just as we do—when the cases are severe; that they treat few extreme cases, etc., but while these arguments are time-

honored they are not strictly true. I know many honest, conscientious homeopathic physicians who would not, under any circumstances, desert the principles of their school, and every city shows a large number of homeopathic families strongly adherent to the faith, who stand to their colors no matter how alarming the illness. I doubt if we will find they have a much greater per cent of fatalities than our own school.

Now, to my mind, the explanation is to be found in the fact that we give too much medicine—oftentimes when it may do more harm than good—and that nature, when practically left to itself, will cure a large majority of diseases. People are treated too much and take too much medicine. Ask any well balanced doctor who has grown old in the practice of his profession and see if he will not yield a ready acquiescence to this statement.

When a young man commences the practice of medicine he usually thinks that the materia medica is full of specifics and that a sick person must always need medicine. As he grows older in years and in experience he begins to doubt the efficacy of drugs in every case, and the older and wiser he grows the more tenaciously does he hold on to old and tried remedies—the more reluctant is he to pick up every new and highly lauded remedy, the more skeptical is he regarding drugs in general, and the more faith does he have in the efficacy of nature, good nursing, and the careful administration of old and reliable remedies, when the indications are positive for their use.

I believe what we need is a more thorough diagnosis of our cases. Men who are painstaking and exact diagnosticians are usually careful prescribers of single remedies. They rarely give combinations; they "hit the nail on the head." We do too much generalizing both in diagnosticating and prescribing. The oculist, for instance, is too free with his astringent wash in a conjunctivitis before he

has assured himself that the conjunctivitis may not be due to a refractive error. The aurist inflates too many ears before ascertaining if there may not be some adenoid vegetation. The laryngologist and his nickel-plated spray apparatus are too inseparable; the former uses the latter too freely, especially when the nasal and pharyngeal catarrh is clearly due to a total or partial occlusion of the nares. The neurologist uses bromide of potassium in epilepsy without ascertaining if there may not be some exciting local cause of the seizures. The gynæcologist is too apt to settle down to a mere routinist with his uterine applications and pads. The general practitioner too apt to ascribe to the liver more than is really its due in the production of disease, and to be too unrelenting in his administration of tonics and cathartics.

I repeat, what we need is a more thorough diagnosis of our cases, and I am sure that the more exact our diagnosis the less need we will find for prescriptions containing a dozen different ingredients, and the less will we be groping around in the dark after new and untried remedies which are claimed to be almost specifics in certain diseases without any particular reference to the causes of these diseases.

PRACTICE OF MEDICINE.

C. H. HUNTER, M. D., CHAIRMAN.

A REVIVAL OF PHLEBOTOMY.

C. H. HUNTER, M. D.

There can be no stranger passage in the history of medicine than the sudden collapse of phlebotomy during the last half of this century as a therapeutic and prophylactic measure.

That a procedure should endure full two thousand years, receive the almost universal suffrage of both laity and profession, and then in less than a half century become almost unknown, is passing strange—an unflattering commentary on the folly of human wisdom!

The reaction has been so great that the younger members of the profession are filled with astonishment at occasional allusions let drop now and then by the older men about its indiscriminate practice.

It would seem as though at one time blood must have flown in the spring-time for real and fancied disease from the greater part of the community. Against such abuse an inevitable and equal reaction came. The pendulum has swung so far back that the individual physician has shrunk from the opprobrium attaching to venesection.

Phlebotomy furnishes the only case in medicine of the

actual extinction of an useful instrument. Of late years an occasional voice has been raised in protest against such extreme condemnation. Here and there efforts have been made to formulate precisely the conditions in which we may expect help from an admitted powerful remedy.

It is with the purpose of obtaining from those who must once have practiced venesection extensively a retrospective judgment of its usefulness, to extract from them a lesson *viva voce* for ourselves who rarely or never see it done, that I call the subject up at this time.

In my student days I had never seen a phlebotomy nor heard it mentioned except in condemnation. My attention was first drawn to the matter by a cerebral hemorrhage occurring in a stout young mechanic. Unconsciousness, with irregular muscular twitchings, deepening into coma, general paralysis and death at the end of the third day, were the symptoms. At the autopsy the ventricles were found filled to repletion with blood clots. The thought was forced on one, that had a really effective way of lessening the cardiac force been employed, a moment might have come during those three days when momentary clotting could have successfully resisted the heart beat and recovery followed.

A similar case presented the past season so striking that I venture to give its details:

A young, healthy lumberman (Swede) was admitted to St. Anthony Hospital for fracture of the tibia. No history of syphilis or other disease. Everything went well the first week. At noon of the sixth day the nurse had left him sitting up in bed eating his dinner. On returning for the tray he was found unconscious, still able to move the limbs about, responding slightly to great efforts to arouse him; breathing heavily, the pupils slightly contracted, responding to light. He was put in a comfortable position and watched for two hours. The stupor deepened. The limbs became flaccid, the breathing ster-

torious, the cheeks flapping, the respirations irregular, slightly of the Cheyne-Stokes order. The face and eyes were suffused; the pulse strong and full but becoming more rapid. The man was evidently rapidly dying. I abstracted about 16 oz. of blood in a rather rapid stream. The breathing became regular, less stertorous; the limbs moved, the lids raised. He responded in a thick voice, "I feel better." The man was saved. There was feebleness for several days, but a good recovery without further accident.

There being no localized paralysis renders it probable that this was a case of so-called serous apoplexy rather than cerebral hemorrhage. Whatever the condition, I have no doubt it was the efficient reduction of arterial and consequent cerebral pressure due to the phlebotomy that saved the man's life.

It is now a well settled rule in therapeutics that the correct use of a remedy is to be deduced from its physiological action. We shall get then our precise indications for the employment of phlebotomy, the time, amount and manner, from an attentive consideration of its effects on the breathing, such as has now been given by a number of men, beginning with Marshall Hall.

Such a consideration at this time would lead us too far. I must content myself with the general proposition that the best effects of venesection must be sought in its mechanical rather than in its vital effects. No loss of blood is in itself profitable. It is an organ a part of which may be at times amputated to the advantage of the organism.

Blood pressure is speedily and effectively lowered—but only for a short time. Temperature is lowered only to rise again speedily. Increased decomposition of albumen takes place in the body, fatty degeneration occurs rapidly in the muscles, including the heart. The tissues at once feel the loss of the nutritive fluid, however bad it may be. The power of resisting disease is lessened.

From these considerations we can safely conclude that venesection in acute disease accompanied by fever—certainly in acute infectious diseases—has been justly discarded. While Jurgensen's dictum that in brain affections venesection is based not on scientific but empirical considerations, we are nevertheless amply justified in following certain indications for its employment, especially in cerebral apoplexy.

These have been admirably summarized by Nothnagel: "A turgescent face, possibly distended veins and strong carotid pulse. If the beat of the heart is strong and the tension in the radial at least normal; and if the pulse, whether slow or of normal frequency, is regular; if the respiration is even though stertorous, and if the individual is strong and not too old."

The use of cathartics and sweating are so thoroughly discredited in cerebral hemorrhage, recovery is so much a matter of chance, that the possibilities of phlebotomy in selected cases should not be overlooked.

The most effective essay for venesection of recent date is that of Hartshorne, who attempts to show by statistical evidence that the mortality of pneumonia has largely increased since the abandonment of the practice. What may be the value of such evidence I do not know. It will certainly serve to break our complacency and lead to a review of present methods. I do not apprehend any one would anticipate a wide field for phlebotomy in lung diseases. The present pathology would put pneumonia among the infectious diseases. The method laid down above would not permit then the general use of bloodletting. It has, however, a clear field where death is imminent from over-distension and threatening paralysis of the right ventricle—mechanical effects. The same rule would hold true of pleurisy.

While, then, the field of application for phlebotomy may be a narrow one, it is none the less a real one, ren-

dering us, judiciously used, valuable service in a tight place; such service in fact as at present we have no adequate substitute for.

THE TREATMENT OF SEPTIC CONDITIONS.

C. H. HUNTER, M. D.

There has been during the year no backward step in bacterial pathology. One after another the acute general and local diseases accompanied by fever are being demonstrated to rest on the same etiological basis.

This is my excuse for grouping together diseases at first blush so dissimilar as surgical and puerperal infection, diphtheria, erysipelas and typhoid fever. And yet this common etiological factor renders a common consideration of them for purposes of therapy eminently philosophical.

My present object is not to propose anything new, but to report the drift of present opinion in the form of propositions concerning the management of sepsis, which shall be neither dogmatic nor argumentative. They shall be the lines by which we can square our opinions. For I conceive one of the functions of such gatherings of medical men as this to be the free interchange of opinions in friendly discussion for ripening judgment and confirming conviction.

Then the first proposition, as to the pathology of the diseases under consideration, the best opinion seems to be that in a certain class of cases the poisoning is at once general, or if local, the local trouble is speedily overshadowed by the alarming general condition. Such are

some cases of puerperal fever, diphtheria, and infection after wounds. The poisoning is thought to be due to the elaboration by living organisms of ferments known variously as ptomaines, sepsine, etc., the sudden introduction of which into the system disorganizes the blood and overwhelms the whole organism.

In another class of cases the germs are confined to a given locality, working mischief by destruction of local tissues or organs, either their poisonous products or themselves entering the system gradually and affecting it only in the degree in which they enter. Such fortunately are the larger number of the cases met with in practice, either by general practitioners in typhoid, idiopathic pyæmia and the dyspepsia and the like, or by surgeons or gynæcologists after wounds, or by the obstetrician in the accidents of childbirth, and so on.

What are the processes invariably met with in all? Necrosis at the point of lodgment of the germ, inflammation, suppuration and ulceration; fever, fatty and parenchymatous degeneration, ending in recovery or death. In the first class of cases the nutritive fluid itself undergoes destructive fermentation. All the tissues degenerate. There is both cellular and general death.

How shall such conditions be met? In the first class of cases everyone must have felt his helplessness. These poisonous substances seem most closely allied to the vegetable alkaloids. New and sometimes real antidotes to these ferments may become known, just as certain alkaloids are antidotes to others, but thus far antiseptic medication has been barren of such results, unless quinia in malaria is such a case. Prophylaxis is our only remedy.

In the second class of cases the conditions are more favorable. Many cases and much suffering may be saved if approached in the proper mental attitude, viz.: In the beginning there is a local point of departure in which, if the enemy can be met by timely, appropriate and efficient

remedies he is vanquished. If not entirely successful here, then elimination from the system and attention to general nutrition are our strongholds. Relying on specifics is a snare and a delusion.

When a student I was told 30 grains of quinine would surely abort erysipelas. My first case got the dose and did not urinate for three days. He got well, but under another man's charge. I was told the same thing in regard to iron. Now the article on Erysipelas in Wood's Ref. Handbook of the Medical Sciences does not even mention iron. Such medication, in view of present pathology, is fruitless and therefore worse than useless. It is harmful. This is specially true of the large doses of quinine, iron, chlorate of potash, etc. The immediate effects are disturbance of digestion, the remote injury to distant organs, as the kidneys.

I would then formulate our procedure in the presence of these diseases thus: No pains should be spared to ferret out the point of entrance of the poison. When found, proper remedies suggest themselves. In idiopathic pyæmia, suppuration in the large joints—an abscess in the brain is not overlooked. A diphtheria is cured before it leaves the tonsils. A pelvic peritonitis is traced to a neglected gonorrhœa, a threatening child-bed fever or milk fever found and aborted in a torn perineum or infected endometrium.

Secondly, the alimentary canal should be attended to—rendered ready for digestion and absorption by the administration of sufficient calomel and abundance of aperient waters.

Thirdly, such nutriment should be administered in such manner as is agreeable to the palate, the stomach and the intestines of the patient.

Fourthly, religiously eschew all other medication, unless antifebrine in case of high fever for the sake of comfort.

In bad cases the nutrition will be the vital point. An invaluable agent in these straits is alcohol. The proof seems conclusive, both clinical and experimental, that alcohol supplies to the body needed constituents as no other substance can. The old guides as to the time and the amount of its administration are still trustworthy, viz.: delirium—the tongue and the pulse. I should defend the value of this drug in prolonging and saving life with a confidence equal to the skepticism I have expressed in regard to others.

This may seem a meagre programme with which to combat such formidable diseases, but if candid we should I think one and all confess that those patients have done the best and shown the least disturbing symptoms in whom we have approached the nearest to such a plan.

Progress in therapy has ever been a sloughing off, a simplification. We are all ready to own the principle in regard to the treatment of typhoid. In this field antiseptic medication has made its most strenuous efforts, but thus far in vain. The medicine that will reach the poison as it enters the doorway of Peyer's patches, or that will act as an antidote when one passed, is still to be found.

Typhoid fever is probably the best of the infectious diseases in which to test the value of the purely medicinal part of our plan.

I should be glad to detail to you in a few words my experience with the disease as I have met it in St. Anthony Hospital. Thirty-four cases have been admitted in all. All entering in the first or second week have received one and two doses of three grains of calomel; antipyrine, gr. x or xv, and cold spongings in case the temperature was found above 102; plenty of cool water to drink and a glass or more of milk every three hours. This was the only treatment till one of our lumbermen complained that he had just taken care of a friend sick with typhoid whose drug bill amounted to $12. He knew he could

not get well on no medicine at all. After this all received 20 to 30 drops of Tr. Cinchon. Co. every two hours. There were no more complaints. In case of dry tongue, weak pulse and delirium, whiskey was administered in large quantities and often if needed. Hemorrhage (epistaxis) was controlled by ergot.

The average stay in the hospital was 28 days—the maximum 56, the minimum 7 days. The first was a severe case of relapse, the second a case that aborted on the fifteenth day. It appeared in a young man, with diarrhœa, cough, enlarged spleen, petechiæ and typical temperature. It was the only plain case of abortion. There were two cases of relapse in all. The highest temperature reached was 106 2-5°, two hours before death. It was preceded but not affected by a free intestinal hemorrhage. This man died. Another death was without cause apparent at the post mortem. It occurred in the second week by collapse. There were then two deaths in 34 cases, a mortality of six per cent.

A number of the cases were in alcoholics. By far the larger number entered with diarrhœa, a few with constipation. Some of the cases were very severe; the majority were about the same as those occurring in private practice. Several cases could be traced directly, apparently, to drinking-water. One patient chewed and ate the thermometer. It occasioned no accident.

It will be seen we have followed the plan of elimination and attention to nutrition by means of milk and alcohol, and I should add careful nursing.

The point I wish to emphasize is that in the present state of therapeutics in regard to septic conditions direct medication is more likely to end in harm than good. What shall be done in any given local conditions I leave to be developed in the discussion.

PHYSICAL EXPLORATION OF THE STOMACH.

C. H. HUNTER, M. D.

The most solid advance of the year in medicine has, without doubt, been in the application of physical methods to the diagnosis of gastric diseases. So much new territory has been reclaimed from the speculative fields of eighteenth century medicine: exact diagnosis and consequent sounder therapeusis of the dyspepsias, are now within our reach. Analysis of the stomach contents gives us opportunities for judging exactly of the performance of its functions, just as analysis of the urine does those of the kidneys. Physical examination of the epigastric region gives us reliable information as to the size and position of the stomach, just as that of the cardiac region does of the heart. Auscultation and percussion, urinalysis, localization of brain lesions, bacteriology, and lastly, physical exploration of the stomach and its contents, what might appropriately be called gastrology, are landmarks of the century's progress in the science and art of medicine.

I do not purpose giving either an exhaustive history of the development of this study or all the details of its methods. My essay is rather an allusion to the work of others during the year, and a bit of experience of my own, around which the judgment and experience of others may crystallize in discussion. What, then, are the points about which we may expect exact information by physical exploration of the stomach? 1st. The size and position of the stomach. 2d. The composition and digestive power of the gastric juice. 3d. The time of digestion. 4th. The absorbent power of the stomach. 5th. The motor activity of the stomach walls.

That a general dilatation of the stomach follows long continued inflammatory change in its walls, and more especially obstruction at its outlet, has long been recognized but not so generally acted upon in practice, either in regard to diet or prompt removal of the digested but retained contents. The presence of dilatation may be demonstrated, *first*, by passing the solid sound and feeling its point at various places in the stomach through the abdominal wall. This method is not deprived of danger, and should not be generally employed. *Second*, the filling the stomach with fluid or gas and mapping out its area by percussion. The most practical method has been found to be that of Kussmaul, viz.: the taking of two grains bicarb. soda and 1½ grains of tartaric acid. Palpation and percussion will then determine the degree of gastric distension. The stomach tube will be at hand to prevent dangerous ballooning.

The second point is by all odds the most important of all I have mentioned, viz., the composition of the gastric juice. Close analyses of the juice and their application to diagnosis and therapy we owe almost wholly to the industry and sagacity of our German brethren. What urinalysis has done for nephritic, that Riegel's work has done for gastric diseases. We should no longer consider means of diagnosis and indications for treatment exhausted in a chronic and difficult case of dyspepsia without having made repeated analyses of the stomach contents. They are not difficult to conduct, nor is it difficult to obtain the fluid from the stomach for examination. The soft flexible tube is the best. The addition of a bulb in the course of the tube is a decided advantage, as by its suction the fluid can be obtained undiluted by the water which it is necessary to add to get the siphon action in the tube. The technique of the introduction is very simple. The most nervous patient can soon be taught to conduct the manipulation herself. I am in the habit of

directing the point downward with the left index finger so that it readily engages in the pharynx. Direct the patient to swallow and not to bite the tube while it is pushed forward with the right hand. After the first attempt there is not usually much gagging nor tiresome effort. I have not myself seen any blood, except in a case where I had clinical reasons to suspect ulcer. In that case a chunk of muco-purulent matter, mixed with a little blood, came up through the tube. The cells of which it was composed were almost all pus cells. This would point to ulcer, but would not of course exclude cancer. However, in repeated examinations hydrochloric acid has been present. So this examination and ratiocination needs only a cure or a post mortem to be complete.

I have another case where for clinical reasons I suspect cancer. Repeated examinations have not disclosed any hydrochloric acid. I am aware that opinion as to the value of this sign, the presence or absence of hydrochloric acid, is still *sub judice*. At present the opinion seems to be that its constant absence positively indicates cancer. We are often in a position in regard to diagnosis where we would be grateful for information so unequivocal.

The test that I have used is that of Gurzberg—the vanillin-phloxoglucin test. These chemicals are cheap and easily obtained. The formula is: Vanillis, 1.0; phloxoglucin, 2.0; alcohol absolute, 30.00. I filter the gastric juice and to a few drops of the filtrate add as many of the test. Evaporate slowly in a crucible or in a piece of porcelain, and watch the margin of the fluid. If cherry red crystals appear, there is hydrochloric acid present; if not, it is absent. I have used the iron carbolic acid test for the organic acids, and have thus far invariably found them present.

The points to be attended to before obtaining the specimen are, the food eaten, and the time thereafter at which it shall be withdrawn. Lembe's test breakfast is the best

food—a known quantity of soup, meat and bread. This should be withdrawn three hours after eating, during full digestion, and at another, seven hours after, at the end of digestion. The digestive power of the fluid obtained is tested by suspending a piece of meat in it a given length of time. To obtain some standard for comparison, some gastric juice known to be normal should be first experimented with. Some one else's gastric juice would probably be better for this purpose than one's own.

The condition of the stomach contents withdrawn at different times after ingestion—three hours and seven hours—would determine the third point, viz., the time required for digestion in any given case. If it is found to continue in the stomach an unusually long time, it is better therapy to remove the stomach contents and follow with a thorough washing out three or four hours after the meal than to leave it to go on indefinitely, just as in hypertrophied prostate we use the catheter to empty the dilated bladder.

As to the fourth point, the absorptive power of the stomach, Pengold's test is said to be simple and efficient. He gives, on an empty stomach, three grains of Pot. Iod. in a capsule, with a drink of water. The iodide appears in the saliva. To detect it, direct the patient to spit every minute onto starch paper; touch with a drop of fuming nitric acid. In health, after seven to fifteen minutes, the paper reddens, then becomes blue.

An estimation of the motor activity of the stomach is ingeniously arrived at by Ewald in this manner. A dose of salol is given. In the acid media of the stomach it is unchanged. In the alkali media of the intestine it is changed to salicylic acid, absorbed and excreted by the urine. The urine is tested every fifteen minutes by adding Tr. Fe. chlor. It turns brownish red if salicylic acid is present. It should appear in about a half hour after the dose of salol is taken. The condition of the

stomach wall could be inferred by the amount and character of the mucus washed up, and by the recovery of any particles or secretions from ulcerated surfaces, as in my case.

It follows from all this that in acid fermentations, pyrosis, eructations, pain, and a host of allied symptoms, we have not been following sufficiently precise indications in the administering of acids, alkalis, and more especially of artificial ferments. In case of acid fermentation, with or without dilatation, chronic inflammation with the formation of quantities of tenacious mucus, the daily use of the tube by the patient herself, with a pitcherful of salted or borax water, is much better calculated to effect a cure than the stock prescriptions of acids, alkalis, or the elixirs of different articles so sedulously and seductively advertised. That the ferments, pepsine, pancreatine and lactopeptine often do good cannot be much doubted, but that they are capable of doing great harm I am equally confident.

I recall one case of acute indigestion in which the symptoms of languor, headache and furred tongue, foul breath, were markedly increased with each administration of peptonized milk. There was even a general petechial rash. These are the symptoms of ptomaine poisoning. There is good reason to suppose that during the course of chronic cases ferment absoption may take place with aggravation of the symptoms.

The physiologists tell us that hydrochloric acid is the essential factor in digestion; that the pepsine is rarely absent from gastric juice. Pepsine should, then, be administered only after the experimental test has proven it absent or of poor quality. It is at least high time to call a halt. Ferments are not harmless remedies. Their use has long since passed into abuse.

NOTE.—The case in which there was no H. Cl. found has developed into unmistakable cancer. The other has behaved more like a case of simple ulcer. [Aug. 6, 1888.]

PERSONAL AND PUBLIC PROPHYLAXIS AGAINST INFECTIOUS DISEASE.

BURNSIDE FOSTER, M. D.

The progress of scientific medicine, and especially our increasing knowledge of the relations of micro-organisms to pathological conditions, is constantly modifying our ideas of disease; and although our therapeutics have perhaps received the least assistance from these developments, we can certainly, in discovering the causes of disease, apply our knowledge towards prevention and prophylaxis, even though we cannot always cure. Preventive medicine is rapidly assuming its proper position in our communities, and the board of health is now recognized as an important part of an efficient municipal government. The advancement of this department of medicine must, of course, depend upon the study of causes.

In all times and in all communities of which we have any history, epidemics have appeared, devastated and disappeared,—and the physician has been, as a rule, powerless either to prevent or to cure. The last quarter of a century, and especially the last decade, has brought us face to face with many facts which had been previously unknown or at best but vaguely suspected, and which have opened an entirely new pathological field for speculation and research. The study of micro-organisms involves labors so intricate and so tedious that there must, of course, be many practitioners who cannot spare the time or the money which many of these investigations demand; but it is, however, in the power of every practitioner, and it is the duty of each of us, to keep abreast of the science of our profession so that we may be able to apply such new facts as are furnished us for the welfare of the communities in which we live.

What I have to say concerns especially those diseases known as *contagious* and *infectious* or *miasmatic*—terms which are often indiscriminately used, and which I shall not attempt to define at this time. The method of propagation of such diseases and the measures to be adopted for their extinction are in many respects so similar that for our purpose a fine distinction of terms does not seem necessary. He would be rash, indeed, who should predict a time when the human race would be without disease; and yet there is no doubt that certain diseases, like certain species of animals, have become extinct, and I believe that there are many others which we can by careful prophylaxis control to a much greater extent than is at present done.

Probably each of you has knowledge, either derived from personal experience or from medical literature, of suddenly arising epidemics of typhoid fever, taking this disease as a type or example, in a locality which had been previously for a long time free from all appearance of it. Science has long denied the possibility of spontaneous generation, and therefore we must seek for the origin of such an epidemic in some previously existing case the infection from which has been imported in some way to this hitherto uninfected locality. The explanation of such epidemics has usually shown that the infection was carried by means of drinking-water, often a running stream to which the dejections of the original case of typhoid found access. Accumulations of filth in the vicinity of dwellings or the use of impure drinking-water, however offensive and deleterious they may be in other respects, would never give rise to a case of typhoid fever, or to a case of any kindred disease, unless the germs of some original case of such disease had first been planted in this, their favorite soil. This statement will not, I think, be disputed in view of the established facts of modern medicine.

I will not be rash enough to attempt an explanation of the first case of typhoid or of any similar disease, any more than I would of the first individual of any particular species either of animal or vegetable life. We may believe in a sort of pathological evolution, or we may believe in an individual creation of disease; but given the first pair of a prolific species, placed in favorable conditions and surroundings for their growth and propagation, and the result is not difficult to predict. To prevent this result we have of course only to destroy the original individuals before they have had time to propagate. Had any one of us been present at the original case of typhoid fever which a few years ago gave rise to an epidemic so fatal to the population of the town of Plymouth, in Pennsylvania, precautions which could hardly have failed to prevent the spread of the disease would have been taken, and several hundred lives would have been saved to that little community. The necessary precautions, so simple and well known that I need hardly mention them to you, would have consisted in nothing more than the proper disinfection of the evacuations of the patient—thus absolutely destroying the offspring of the disease.

Typhoid fever is one of the most stubborn diseases with which we have to deal in Minneapolis, and it is not less so, I fancy, in this city; protean in its forms, severe in character, and too often fatal in its termination. Many of the cases occur in families living in old-fashioned houses with privy attachments, and drinking freely of water from a well—the privy and well being perhaps side by side or but little distance apart; yet I will venture to say that it is by no means the greater number of the physicians under whose care the cases fall who take the necessary precautions in regard to either the vomitus or the stools of their patients. The evacuations are too often thrown with other filth into the privy or perhaps onto a neighboring dunghill, and the subsequent life history of these

prolific germs may be read in the increasing number of cases of typhoid fever and on the pages of the physician's visiting book. The number of cases of this disease which occurred during the past year in Minneapolis has been very great, and there seems no reason to hope that it will be less during the coming year. It would, I think, be both valuable and interesting if the board of health should require each physician to report all the cases of typhoid coming under his observation. We should then have more positive knowledge of the prevalence of the disease and of its favorite localities.

Another disease which most pathologists, and with good reason, class among infectious diseases is pneumonia. There seems to be positive evidence that there is a special coccus found in this disease, and that its method of propagation is not unlike that of the typhoid germ. I have myself observed two local epidemics of pneumonia, in each of which the original case and the probable source of infection was discovered, and I have no doubt that similar instances are familiar to many of you. The view that exposure to severe cold or to sudden changes of temperature bears more than a casual causative relation to pneumonia is one which, although still strong in the minds of the laity, is I think at least doubted by the best authorities. If, then, we accept the theory which places pneumonia among the infectious diseases, would it not be a wise and proper measure to destroy as far as possible the infection which comes from every case? This would be accomplished mainly by disinfecting the sputum with some suitable agent. In short, given a contagium vivum, let us seek in every case to destroy it.

The epidemic which prevailed so extensively among us last winter, the etiology and pathology of which gave rise to so much discussion, had many of the characteristics of an infectious disease; and if so, there is no doubt that the

infection was disseminated in the stools of the afflicted. In a new and rapidly growing city like Minneapolis, where the drainage is necessarily imperfect and where the drinking-water is so filthy, we must expect that infectious diseases will prevail and will be difficult to eradicate; but I am sure that if every physician who had charge of a case of infectious disease would make it a part of his duty to see that all the infectious material coming from his patient was destroyed, and that all articles coming into immediate contact with the patient were properly disinfected, the number of cases would be greatly diminished.

An interesting series of experiments has recently been completed by Dr. Carnet, of Berlin, studying under Prof. Koch. He collected the dust from hospital wards, dwelling houses and hotels where phthisical patients had lived, and by culture and inoculations demonstrated the presence of the tubercle bacilli in this dust. In a subsequent series of experiments, where all the sputum of the patients had been carefully disinfected, in not a single instance were bacilli found in the dust which was collected in the same manner. Of course in such a common disease as pulmonary tuberculosis much infected material must be scattered about in public places; but where patients are confined to one place, and are constantly under observation, it is always wise to have the sputum deposited in some receptacle containing a disinfecting solution.

Isolation and subsequent disinfection in cases of small pox, scarlet fever and other purely contagious diseases is usually practiced with care by most physicians, and I suppose that you will all agree that it would be criminal to go from a case of puerperal fever to dress a recent surgical wound, or from a case of erysipelas to a lying-in woman, without the most rigorous antiseptic precautions.

The really valuable and efficient disinfectants at our disposal are few, and it is of the utmost importance to use only those which have been proven to destroy absolutely

the germs of disease. The best and often the simplest germicide is heat—most efficient in the form of steam—and of chemical disinfectants we may choose between carbolic acid, chloride of lime and corrosive sublimate. The directions for cases of typhoid fever recently adopted at the Massachusetts General Hospital in Boston require the use of carbolic acid—5 per cent solution for the evacuations and 2½ per cent for the soiled linen and bedding. The bedstead is thoroughly washed with corrosive sublimate (1-1000.) Whatever agent is chosen for disinfection, the physician must be explicit in his directions, and must insist as firmly upon their being carried out as he does upon the carrying out of any other directions in the treatment of his patient.

In addition to such prophylactic measures as are included in the destroying of the infection arising from cases of infectious disease, a measure of equal importance is the purifying so far as possible of the conditions which surround our patients and their families. When we can make them understand and appreciate some of the chief causes of the diseases with which they are afflicted, then we shall have in them active and willing co-opertion in our measures of prophylaxis.

Although our knowledge of the science of drainage and plumbing is constantly improving, the tendency of contractors and builders—especially of dwellings for the middle and poorer classes—is to neglect these principles and to substitute cheap and dangerous devices which, being covered up, often pass with little or no inspection. The contrivances for drainage which are being introduced into some of the cheap and hastily constructed houses, the exteriors of which are often so attrative, are little better than death-traps, and their use is a crime and should be punishable as such. The statement that a house is furnished with modern sanitary conveniences should never be accepted as a guarantee of its safety, but a thor-

ough inspection of the plumbing should always be made by some competent person.

Careful attention to these details and to the condition of the drinking-water will form a very strong protection against all classes of infectious diseases. No water, except pure spring water, can be considered absolutely safe unless it has been either boiled or filtered. I do not think that this point has received the attention which it deserves, and it should be especially insisted upon to our patients at times when infectious diseases prevail.

The sanitary condition of the streets and alleys of the city belongs to the health department, and is a most important point to be considered in regard to public prophylaxis. Filth and garbage of all kinds should be at once removed and disposed of in some suitable manner. The safest and best way is by burning, and I have been interested to see that the city of Minneapolis has been contemplating the purchase of a garbage crematory, which would certainly be a most useful addition to the health department. In London, and I believe in some other large cities, the dung of horses and other animals is at once removed from the streets by boys and men employed for the purpose—and its sale for manure furnishes an annual revenue to the city which more than pays for the expense of its removal.

An important public measure which has recently been adopted in Berlin is the establishment of a public station for the disinfection of clothing, bedding, carpets, etc., after infectious diseases. The articles to be disinfected are at once wrapped in a sheet wet with carbolic acid, and are taken in a closed wagon to the disinfecting station, where they are exposed for a suitable time to the action of steam, when they are considered to be properly disinfected and safe to use. We all know how hard it is to get patients to follow our directions in regard to the disinfection of a

room and its contents, and how difficult it often is, even with the best intentions, to have such disinfection properly accomplished; and the value of such a public institution as the one at Berlin is certainly very great. The expense could of course be partly met by charging a small fee to those who could afford to pay it.

It has occurred to me that it would be a wise and sensible thing for the board of health of every city to have printed and furnished to every general practitioner cards giving minute and efficient directions for disinfection during and after cases of infectious diseases. These cards could be given by the physician to those who had the immediate care of the patient, and would be of great assistance in carrying out the necessary measures. There will, of course, be many families who cannot be made to follow these directions, but I feel sure that if some such plan as this were adopted it would insure a great reduction in the number of cases of infectious diseases in our cities. And this is, perhaps, of even greater importance in villages and small communities remote from the great centres of population, and where infectious diseases do not, as a rule, prevail.

He who has performed a brilliant and successful surgical operation and has saved the life of his patient has done a noble thing, indeed, and may well be proud of his achievement; but how much greater has been the work of that man, and how much the more has he been a benefactor to the community, who has recognized at once the nature of an infectious disease, and by intelligent and faithful care has stamped it out with a record of but a single case.

I am aware, gentlemen, that in what I have said I have told you nothing new, nothing which you did not know before, but my object has been to emphasize the importance of responsibility which rests upon us as physi-

cians, and I feel very sure that if we keep that responsibility in mind we shall do better work in this direction than is now being done, and that in the results we obtain we shall find an ample reward.

CERTAIN RENAL TUBE CASTS AND THEIR CLINICAL SIGNIFICANCE.

TALBOT JONES, M. D.

As the title of this paper implies, no study of the etiology of the various forms of nephritis will be attempted. In order to understand the significance of tube casts it is necessary to bear in mind the minute anatomy of the kidney. The kidney is a gland of the class called tubular, and both its cortical and medullary portions are composed essentially of secreting tubes, the *tubuli uriniferi*, which by one extremity in the cortical portion, end commonly in little saccules containing blood vessels, called malpighian bodies, and by the other open through the papillæ into the pelvis of the kidney. The pyramids are chiefly straight tubes, while in the cortical region they spread out more irregularly, and become branched and convoluted.

The tubes of the kidney are composed of a nearly homogeneous membrane, lined internally by spheroidal epithelium, and for the greater part of their extent are about 1-600 of an inch in diameter. The malpighian bodies, first accurately described by Bowman in 1840, are found only in the cortical substance of the kidney. They are small round bodies, of a deep red color, and of the average diameter of the 1-120 of an inch. The looped

tubes of Henle form intercommunications between the medullary and cortical tubes already described, and are of less diameter than either of them. The clinical import of this will presently appear.

As there are several varieties of tube casts observed in the urine of patients suffering from the different forms of Bright's disease, and as these casts present different points of diagnostic and prognostic importance, it may be well before beginning a description of the casts themselves to refer briefly to three cases of Bright's disease, each of which may be taken as a type, and observe the varieties of tube casts found in each.

CASE I. Miss ———, aet. 20, in the higher walks of life, was seen in consultation with Dr. Wharton. She had for a year or two suffered from anæmia, palpitation of the heart, anorexia, headache, etc., and was weak, pallid and bedridden. She had a well marked soft hemic systolic murmur at the base of the heart and a venous hum over the jugular vein. She had general anasarca, which was considerable, including great puffiness under the eyes, and the peculiar earthy or fawn color so characteristic of advanced Bright's disease. Her urine was scanty, turbid, of a high specific gravity, slightly acid in reaction, the color of sherry wine, and on boiling it in a test tube about three-fourths of the liquid solidified. Under the microscope I found numerous granular casts, large and small; some hyaline and blood casts, and in addition a considerable number of oily casts and oily cells. This was a typical case of the so-called "large white kidney."

CASE II. Mr. Phillips, a cigar maker, residing on Jackson street, aged about 55 years, was short, stout, and by nationality a German. He had always been a generous liver, but had enjoyed fairly good health up to within two years of his death. He had been under my care off and on for a year or more. He suffered from a greatly dilated

stomach and the various dyspeptic troubles this condition entails. He also complained of his kidneys and bladder and this induced me to examine his urine. This he passed in large quantities, and frequently being compelled to rise from his bed several times during the night for this purpose. The urine was pale, limpid, of a low specific gravity, and on boiling it about one-eighth part solidified. At no time while under my care did he have any œdema or dropsy. Under the microscope a drop of his urine showed numerous large and small granular casts together with epithelial cells, in various stages of disintegration. In addition here and there in the field were observed oily casts and cells, distinct enough, but by no means numerous.

This patient presented the (in my experience) unusual ocular phenomena of retinitis albuminurica, consisting of œdematous swelling of the retina, white degenerative spots and patches, inflammation of the papilla and consecutive atrophy of the nerve. This was a case of contracted kidney, and as an antithesis to the "large white kidney," it has been called the "red small kidney." I finally lost sight of this patient, and subsequently learned that he died in St. Joseph's hospital.

CASE III was a little girl aged nine years, who was referred to me from Moorhead. She had general anasarca, the sequel of scarlet fever, and was a very sick child. Her urine, which had a specific gravity of 1030, showed numerous epithelial and blood casts together with considerable spheroidal epithelium and granular material. In addition to this the microscope revealed a small number of oily casts and cells. This was of course a case of "acute desquamative rephritis." The microscopic examination of the urine secreted during the different stages of the various forms of renal degeneration, which are usually included under the generic term "Bright's disease," afford evidence which, rightly interpreted, is of great value as to

the morbid changes which are in progress within the kidney.

This evidence is of a peculiarly interesting character, and based upon the following facts: 1st, that the glandular structure of the kidney is tubular; 2d, that while some of the pathological change in the kidney is intertubular other changes are intratubular; 3d, that a material derived from the blood is moulded within the tubes, becomes detached, and is forced out into the secreted current of fluid, and appears in the form of cylindrical casts of the tubes; 4th, that these tube casts vary much in size and form, and of the materials of which they are composed.

How are these casts best observed? Every one accustomed to the use of the microscope has his own favorite way of using it. In searching for tube casts, however, it may not be amiss to state that a frequent mistake is made of using too high a power. For all practical purposes a power of 250 meets every requirement. Staining with eosin or methyl green will make the tube casts much more distinct. The urine to be examined should be placed in a conical vessel and allowed to stand for at least 24 hours, in order that the sediment may deposit. The sediment may be more or less copious, or only a slight, scanty cloud. According to George Johnson it is a rule to which there are few exceptions that if no sediment be visible few or no tube casts will be formed even after the most prolonged and careful examination.

The latest pathology teaches that all tube casts are composed essentially of an albumino-fibrous material derived from the blood. The exact manner in which tube casts are moulded in the convoluted tubes is obscure. It is difficult to understand the nature of that chemical reaction which causes the albumino-fibrous material derived from the blood to solidify within the renal tubes, and yet fail to solidify in the same urine in the ureters and bladder. The reaction of urine ordinarily is slightly

acid, and a sufficiently strong acid when brought in contract with egg albumen or serum albumen causes it to solidify. If the theory be accepted that these tube casts are formed by the albumino-fibrous material coming in contact with the acid urine, it still leaves unexplained the question why this albumino-fibrous material should solidify in the kidney and not in the bladder—the interior of both organs being bathed in the same liquid.

Another interesting question, and a possible hint as to treatment is this: Assuming that tube casts are really formed in the kidney from the contact of acid urine and this albumino-fibrous material, if now the urine were rendered markedly alkaline in reaction would such casts be formed at all? As no experiments, so far as I know, have ever been made to settle this question, we must for the present content ourselves with merely referring to it. Reasoning by analogy, however, it would seem worthy of examination; for physiology teaches that the coagulation of the blood is inhibited by the addition to it of the alkaline and earthy salts in the proportion of 2 or 3 per cent, and when larger proportions of these alkaline substances are employed the coagulation of the blood is prevented altogether. It is not unreasonable to assume that the chemical behavior of this coagulating material would be the same, whether within the blood vessels or the *tubuli uriniferi*.

Tube casts are of different kinds. Some are diaphanous or waxlike, and are known as hyaline or waxy casts. To these casts epithelial cells, in more or less abundance, are frequently adherent. Other varieties are composed chiefly of desquamated epithelium from the convoluted tubes. Occasionally the casts appear to consist of coagulated blood, seen chiefly in acute desquamative nephritis. Hyaline casts may be large or small; if of the former kind they will measure about 1-500 of an inch in diameter; if of the latter about 1-1000 of an inch.

The explanation of these differences in diameter is not, as is sometimes carelessly asserted, due to the difference in size of the tubes in which they are moulded. Our best pathologists teach that the vast majority of casts, both large and small, are formed within the convoluted secreting tubes of the cortex, which are remarkable for their uniform size. The difference in diameter of the casts is explained by the fact that the small casts have been moulded within the lumen—the clear central canal—of the convoluted tubes which retain their living glandular epithelium; while, on the other hand, the large hyaline casts have been formed within the basement membrane of a tube the epithelial lining of which has been destroyed and displaced by the hyaline material of the cast. "The changes are localized almost exclusively in the convoluted tubes." (Charcot.)

The size of tube casts observed in any given case of Bright's disease has an important bearing on the question of prognosis. If small in size, that is if not over the 1-1000 of an inch in diameter, they are formed in tubes in which the epithelium is intact, and consequently the prognosis is not necessarily bad; if, however, they are large, say the 1-500 of an inch in diameter, they are formed in tubes in which the epithelium is irreparably lost, and the prognosis is necessarily fatal. Another interesting fact is that many of the hyaline casts retain more or less of the convoluted form, which proves that, although in their exit from the kidney they have passed through the straight collecting tubes of the medullary cones, they were really moulded in the tortuous secreting tubes of the cortex. No doubt many of the long convoluted casts, which in sections of the cortex may be seen filling the uriniferous tubes, become broken into short fragments during their passage through the straight tubes of the cones. The explanation of this, according to recent pathology, is that a convoluted cast, in passing

through a straight collecting tube, has been partially torn asunder during the straightening process to which it has been subjected.

What has been said relates chiefly to the large and small hyaline casts. Let us consider for a moment another variety. Acute desquamative nephritis is generally due to scarlet fever. It is not the character of the epidemic which determines the extent and severity of the kidney changes; some of the mildest epidemics are remarkable only for the great extent of the kidney complications. Oertel suggests as a cause of acute nephritis the transference of "bacterian colonies" and their subsequent multiplication. Pregnancy may stand in a causative relation, so also may the sudden arrest of the functions of the skin, diphtheria, erysipelas, rheumatism, the ingestion of turpentine, cantharides, or the catching of a severe cold. After exposure to wet and cold a fever sets in accompanied by a dull pain in the region of the kidneys, and nausea. The eyelids become puffy and soon a general œdematous condition of the skin is observable. The urine contains albumen, is of a high specific gravity, and dingy from the admixture of blood due to capillary rupture and extravasation in the malpighian bodies. Physicians should be on their guard; the ingestion of beet-root, some kinds of strawberries, logwood and rhubarb imparts a deep red color to the urine which may be mistaken for blood, if not critically examined by appropriate chemical tests.

When, owing to acute congestion of the kidneys, blood escapes from ruptured malpighian capillaries into the uriniferous tubes, some of the blood coagulates within the lumen of the tubes, and subsequently appears in the urine in the form of "blood casts," and a rapid new formation and desquamation of the glandular epithelium of the convoluted tubes. If these desquamated cells become

entangled in the tube casts they are then known as epithelial casts.

During the progress of acute nephritis, it not unfrequently happens that some of the exudation products undergo an oily transformation, and oil accumulates in the gland cells. George Johnson holds that a few oily casts and cells mingled with the other casts already described, have no specially unfavorable significance; but when after albuminuria has existed for several weeks or months, the oily casts and cells preponderate, or even entirely replace the other forms, there is reason to fear that the kidney is undergoing an incurable fatty degeneration; and if death occur at this stage, the kidney will be found enlarged and pale, while through its cortical portion yellow granules of fatty degeneration will be found scattered. This constitutes the large, white, granular, fat kidney. The large white kidney may exceed 12 ounces in weight, the normal weight of the kidney being from 3 to 5 ounces. On the other hand the red small kidney, in the advanced stages of the disease, becomes much atrophied, an extreme case cited by Wilkes only weighing one and a half ounces.

In speaking of these oily casts it was said that they are usually seen in cases of acute desquamative nephritis; or acute congestion of the kidney, and such is the fact in the great majority of cases. They were observed in each of the cases I have referred to in the beginning of this paper.

One precaution may be mentioned in examining the urine for waxy casts; they may be dissolved by urine which has become alkaline from the decomposition of urea. If an attack of acute desquamative nephritis becomes prolonged and gradually passes into the chronic form, it does so insidiously. The transition of the acute into the chronic is indicated by the disappearance of

blood from the urine, by its lessened specific gravity, by the smaller amount of albumen, and not uncommonly by a decrease in the quantity of urine voided. The tube casts may for a short time entirely disappear. About this transition period too the albumen is very variable in amount, its quantity may fluctuate much in the same patient, or even change from day to day. It may in some cases even disappear for a short time.

A little later on, as the disease makes progress, the epithelial casts disappear and are replaced by granular and hyaline varieties. If these casts be of the large kind, and especially if the urine be loaded with detritus and tubular *debris*, it indicates extensive destruction of the uriniferous gland cells, and we have in these appearances evidence that the process of granular contraction has begun in the cortical portion of the kidneys. And the gravity of the prognosis is greater in proportion to the amount of the microscopic sediment in the urine.

There are no forms of tube casts which are distinctive of lardaceous degeneration of the kidneys. Klebs asserts that diagnosis of this disease has to be based upon a consideration of the general history of the case rather than upon the microscopic appearances of the urine. The chief cause is suppuration, especially of the interior of bone, or of ulcerations affecting the skin and mucous membrane. Bartels believes that ulceration of the intestinal mucous membrane is especially prone to produce the disease. Scrofula, tuberculosis, syphilis and cancer are also supposed to stand in a causative relation.

In order to make a differential diagnosis between this and other varieties of Bright's disease, the diagnostician is often sorely puzzled and not infrequently is completely baffled. Remembering the producing causes, however, and that in amyloid kidney the urine is abundant, pale, of a low specific gravity, deposits very little sediment containing a few hyaline casts and occasional waxy casts, he may

often be able to predict with confidence the disease with which he is dealing. The urine secreted by the small red granular kidney is usually copious, of low specific gravity, and more or less albuminous, though the albumen is not rarely scanty, and at some periods of the disease entirely absent.

The entire absence of albumen, however, in granular kidney is rare, and there is no evidence to show that any case of the disease has passed through all its stages to a fatal termination without the more or less frequent and copious appearance of albumen in the urine. The microscopic evidence of the existence of the small red kidney consists in the appearance of granular casts containing epithelial cells from the uriniferous tubes in various stages of disintegration. The presence of granular epithelial casts and scattered epithelial *debris* is evidence that a process of epithelial degeneration and disintegration is going on in the kidney.

It is often asserted that no tube casts can escape from the convoluted tubes of the cortex of the kidney. This assertion is based upon the assumption that all the convoluted tubes pass into the looped tubes of Henle which are supposed to be too narrow to permit the passage of tube casts. The latest works on pathology show that this anatomical assumption is erroneous.[1] It is now said that the vast majority of tube casts which appear in the urine have been moulded within the convoluted tubes of the cortex. The casts which have their origin there, according to George Johnson, are:

"1st. Oily casts, the fatty infiltration being as a rule confined to the glandular epithelium of the convoluted tubes. 2d. The small white-cell casts, containing leucocytes, which can have no other source than the migration through the walls of the malpighian capillaries. 3d. Blood casts, the result of hemorrhage from the malpighian capillaries into the commencement of the con-

voluted tubes. 4th. Those large hyaline casts which after escaping with the urine retain the convoluted form, clearly indicating their source in the tortuous tubes in the cortex. 5th. The epithelial casts, with certain numerous cells, having all the characters of the glandular epithelium of the convoluted tubes."

A few words regarding one other aspect of this subject and I have done. Much has been said about tube casts, the albuminous material of which they are composed, the clinical significance of the different varieties, and under what circumstances they are best discovered. Thus far we have dealt with a disease possessing distinct pathological characteristics, and definite clinical symptoms, and which with our modern instruments of precision brings it readily within the ken of the ordinary medical mind. Looking for a moment more deeply into the subject of Bright's disease than we have yet done, many obscure problems present themselves for solution. Only one will be touched upon. What is the condition of a patient's kidney and blood during the period anterior to the discovery of Bright's disease, and can such a condition ever be detected or even surmised?

One error the physician frequently commits is to attach undue importance to albuminuria as a symptom of Bright's disease. Its presence or absence is often regarded as the crucial test; and after an examination of the urine if no albumen be detected, *a priori*, there is no Bright's disease. Yet the late Dr. Mahomed collected abundant evidence establishing the fact that the kidneys examined *post mortem* in many patients dying at Guy's Hospital, whose urine, though repeatedly examined, had never been in the slightest degree albuminous, exhibited considerable degenerative changes. Prof. Dieulafoy has made similar observations.

Since these investigations, confirmed by later observers, albuminuria has lost a good deal of its significance as a

clinical symptom. The elaborate experiments of Gull and Sutton describe the progression of symptoms in the earliest stages of Bright's disease—a stage which antedates the appearance of albumen in the urine.

The very earliest state, then, of renal degeneration, in many cases at least, is a pre-albuminuric state, and its detection is of immense practical importance to the physician, who at this early period may be able to arrest or control it by hygienic or therapeutic treatment, which too often cannot be done when the disease has become well established. It is likewise important to the surgeon, who would decline an operation if the warning symptoms were present.

How, then, may we detect the early beginnings of Bright's disease; that is to say, the pre-albuminuric period? Unfortunately in the present state of our knowledge there are no symptoms distinctly characteristic of this condition, and none which will enable us with certainty to detect it. But there are a chain of symptoms which, intelligently investigated and rightly interpreted, will cause us to strongly suspect such a state. When you have a patient who is suffering from dyspepsia, or nervousness, who has frequent headaches, who complains of *malaise* and weakness, who cannot do his work well, and is annoyed it may be with insomnia, examine his urine, and if you find the quantity passed in twenty-four hours is under forty-five ounces, that it has not a specific gravity greater than 1010—a urine in which urea is under two per cent, whether albumen is present or not, whether you find casts and *debris* or not, you may be certain that your patient's kidney is not doing its duty. "Renal inadequacy" is the name applied to these symptoms by Sir Andrew Clarke, but he guardedly admits that this is but another name for Bright's disease in its earlier stages.

It appears, then, that there is a certain state of the kidney in which, without any alteration of structure so

far as the eye can detect, it can, nevertheless, not produce a perfectly healthy urine. It is a urine low in density, often quite inodorous, and deficient in solid constituents, principally in urea and its congeners. If your patient persistently passes this kind of urine, and suffers from the various symptoms of ill-health already enumerated, and especially if he has a heaving left ventricle, a tense pulse, and an increased arterial tension not otherwise accounted for, there is not only a strong reason to suspect the early stages of renal degeneration, but you can with considerable confidence affirm that you are dealing with the pre-albuminuric stage of Bright's disease.

AN INTERESTING CASE WITH UNUSUAL RESULTS.

FLORA C. ALDRICH, M. D.

Nov. 4th of last year I was called to see a boy four years of age who, previous to an attack of measles five months before, had been well, and of marked precocious intelligence.

A week previous to my call a change had been observed in his disposition; he had grown peevish and fretful, did not care to play, could not bear the light, saying that it hurt his eyes, and complained of headache and pain in the stomach. His mother had noticed a loss of appetite, with fever at night, and it was upon observing that he could not walk and that his right eye was turned, as she expressed it, that she sent for me.

I examined the child thoroughly, and found a convergent strabismus of right eye with pupil moderately dilated and almost complete loss of movement of the right leg.

The tongue was furred but moist, temperature 100°, pulse slow and irregular, bowels very constipated. The child was not anæmic and there was no otitis media. There had been neither vomiting nor convulsions. Upon pressure there was no line of redness, neither was there retraction of the abdomen.

What was the matter? Surely there had been a prodromic period, yet the change in the axis of the eye, and the ataxic symptoms, were sudden. There was pressure at the base of the brain, either a coagulated exudation from the vessels or a deposition of tubercle. The child had coughed slightly for a few days, and excepting this gave no evidence of tubercular lesion.

I was informed there was no scrofula nor tuberculosis in parents or grandparents (one aunt, I believe, had died from consumption), therefore I concluded that the child must have had a passive congestion of the meninges with an exudation, and to accommodate the new occupant the normal contents of the brain case or the calibre of the vessels must have yielded and the exudate displaced and deposited at the nuclei or along the perineural sheaths of the nerves as they pass from their origin.

I told the mother that her child was seriously ill from a disease of the brain and ordered him removed to a darkened, quiet room, and in connection with a low, light diet prescribed the bromides of soda and potassium with iodide of potassium and calomel, with lactopeptine three times daily.

The child remained the same for three days, when I discovered that the muscles of the right leg, which had been so limp and lifeless, had within a period of thirty-six hours contracted so that the leg was at right angles with the thigh, and the flexor tendons rigid and immovable. The strabismus became more marked, and the parallelism of the other eye affected. The child appeared more stupid, but without entire loss of intelligence.

I summoned for consultation Dr. Hunter of Minneapolis, who agreed with me as to the location of the disease, but believed the pressure caused by a deposition of tubercle.

After consultation we concluded to give the calomel in smaller doses (grs. 1-10) several times daily, and in connection with the bromides and iodide to apply iodoform ointment at the base of the brain.

For four days the boy remained in the same alarming and apparently hopeless condition. On the morning of the 13th I found him somewhat brighter, the muscles less contracted and the tendons not so rigid. The following day he called for his playthings, and from that time the symptoms gradually passed away and at the end of six weeks he could walk and seemed well.

The strabismus was the last symptom to disappear, and that was not fully overcome until two or three months after. I gave him the iodide of potassium for weeks with syr. lacto-calcii phosphatis, oleum morrhuæ, and syr. ferri iodidi. He is now well, and his intellect is not in the least affected.

SURGERY.

A. C. WEDGE, M. D., CHAIRMAN.

A CASE OF TRAUMATIC TETANUS, RECURRING DURING A PERIOD OF TWENY-TWO YEARS. OPERATION AND APPARENT CURE.

F. A. DUNSMOOR, M. D.

A. H. S.—German, aged 42 years, twice married, father alive and in good health, and entire family history good. He was admitted to St. Barnabas Hospital in this city, and had the following history:

He was a soldier in company A, 63d Regiment Indiana Vols., 23d Army Corps, and was with Sherman in his march to the sea, through Georgia. In battle at Resaca, Ga., he was shot with an ounce ball which entered the outer middle third of right thigh and passing through the upper inner angle of Scarpa's triangle, striking the pubic bone, then through the bladder, and is believed to have lodged in the left side of pelvis. He laid on the battle-field forty-eight hours. When he was moved to the field hospital he dropped from the ambulance and had a terrible hemorrhage from the femoral wound, which was enlarged, and vessel tied. A week later, while being

changed from one cot to another, the blood again burst forth from the wound. Without waiting for anæsthesia the patient reports that he was cut and tied again, and was immediately seized with lockjaw. A bullet held by him between his teeth during the operation was instantly divided as an effect of the force of his spasm. He was then given chloroform, and some operation was made by Dr. Rice of Ohio. He was in Chattanooga hospital more than a year from that date, and all his urine passed from the wound, the bladder holding about six ounces. Any attempt to pass a catheter produced tetanus.

He afterward went to some surgical institute in Philadelphia, where he remained seven months. The bullet, and some pieces of bone from the back and side of pelvis, were removed. The patient returned to Indiana in 1867, and the wound closed. Later, he received some injury while threshing grain; tetanus followed with such force as to produce right inguinal hernia. The wound reopened and discharged some pieces of bone. After recovery from this attack he married and had fair health for one year. In 1869 he cut his right knee with the corner of a chisel and had lockjaw for three weeks following—spasms worse from 5 to 10 P. M. He could not walk with the right leg for three years, and used crutches for six years after that accident. In 1878 he hurt his toe, while wet and cold, and had his usual attack of tetanus in a lumber camp and was treated by Dr. Cushman, of Sullivan County, Ind. From that time to 1883 almost any injury to the right leg would produce attacks of tetanus. Dr. Cushman reports eighteen attacks in four years.

Subsequently he removed to Prattsburg, Wis., having no more trouble until 1886. One day while overheated he sat down, removed his truss and drank cold water; when he arose his right leg maintained the same position as while sitting. Then followed diarrhœa and tetanus for a week, with epistaxis. This was repeatedly reproduced

by slight causes during 1887, the intervals having been shorter, spasms worse and longer continued. In October, 1887, while working a lever in a saw-mill, he became unable to open his right hand, and was obliged to use his left to detach the right hand clutched to the lever. He was carried to his house, where tetanic spasms continued for three weeks, ceasing only after enormous doses of bromidia combined with powerful sedatives, given by his attending physician from Ashland, whose name is forgotten.

On visiting him I learned and saw that he, being a powerful man, required the united efforts of his attendants, varying from three to ten in number, to control the contraction produced by cramps, as he termed them. When no restraint was applied the pains were more severe and he was constantly apprehensive that another attack was imminent, and that he would be injured or some bone dislocated. I advised him to go to St. Barnabas Hospital for observation and treatment. There he was seen in consultation by Drs. Hunter, Dunn and Jones, as well as by several visiting physicians and surgeons. After careful watching to eliminate malingering, spasms frequently came on during a three weeks' stay in the hospital He did not lose consciousness in any of the attacks, except under large doses of chloral.

I believed from the history of the case that from the time of his hemorrhage there had been some injury to the anterior crural nerve of such nature (probably ligated) as to directly or indirectly excite the tonic spasms from which he so frequently had suffered. With the concurrence of the consultants named, I made the following operation: The entire scar tissue, six inches long and averaging two inches in width, was removed. The divided artery was found to have been ligated, with the anterior crural nerve and femoral vein, about two and one-half inches below Poupart's ligament. The vessel was sepa-

rated and tied an inch higher. The nerve had a bulbous mass at its point of division and several smaller neuromata higher. Traction was made and the nerve divided just beneath Poupart's ligament. After removal of that section the wound was closed with ordinary antiseptic dressings and the patient made a fairly rapid recovery, leaving the hospital two weeks later for his home.

Up to the present writing there has been no return of anything simulating tetanic spasms. The patient reports that he does not feel sure of the motion of his leg unless directed by his eye. This is doubtless due to the division of some nerve branches which had been given off in the three inches of section removed. The parts removed were photographed under direction of Dr. Hunter, and are herewith exhibited. Mr. S. writes on June 18th that his general health is as good as ever in his life, but that he uses a crutch still in walking.

Since writing the above reports, letters have been received from Drs. Hinkle and Cushman, of Indiana, as well as others who saw the case at different times, confirming report of patient's condition during different periods of the past twenty-two years.

INFLAMMATIONS INVOLVING THE CÆCUM, ITS APPENDIX OR BOTH.

W. J. MAYO, M. D.

[illegible]at the "[illegible]nflammation of the bowels" of [illegible]s, i[illegible] the majority of instances, typ[illegible]l as we become more familiar with [illegible]hese pathological changes, [illegible]rrors in diagnosis which

have been made. This retrospect will include many cases of supposed typhoid fever, idiopathic peritonitis, or pelvic abscess. Before beginning this discussion, a brief review of some special points in the anatomy of the cæcal region may not be out of place.

The cæcum, lodged in the right pelvic and illiac fossa, is in the nature of a pouch with two openings in its upper extremity; at its lowest point is a slit-like opening into the appendix. It is very distensible, covered by peritoneum and though more or less fixed to the poas muscle by connective tissue, is capable of a considerable range of motion.

The location of the internal and external posterior longitudinal bands of muscle fibers should not be forgotten, as their resistance may assist in directing pus or limiting an abscess. The anterior band is of less importance in this connection.

While the appendix may be a very useful canal in some lower orders of life, its fœtal remains has proven to be an unlucky inheritance to man. It varies much in size and direction, but as a rule extends upward and inward and is adherent to the posterior wall of the cæcum.

This crude survey of the topography of the region, is to demonstrate anatomical reasons, why small bodies or fecal concretions may gravitate into the cæcum and thence into the appendix; and how the resulting abscess, in this little death trap, may be influenced, in its point of easiest rupture, by the length and direction of the appendix, and its relation to the cæcum and its longitudinal bands.

We gain also a clear conception of the possibility of free fecal passage over a distended cæcum, with resulting freedom from the obstinate constipation which is usually expected.

I will not take up your time with a discussion of new growths, intussusception or those processes in which the

cæcum, in common with other portions of the intestine, participates, but will call your attention for a few minutes to the subject of fecal impaction, which can ordinarily be separated from typhlitis or perityphlitis by the presence of a doughy tumor extending upward into the colon and a general tendency to depression and often melancholia, without marked signs of inflammation, as the following case will illnstrate:

Oct. 20th, 1887, Mrs. A. W. of Dexter, Minn.—Had suffered some months with anorexia, constipation and marked melancholia. The patient was emaciated, and except an impacted cæcum, had no discoverable lesion. Enemata of from two to four quarts of water, given in the knee chest position, produced large evacuations of scybalæ with corresponding improvement. This case also illustrates the "fecal anæmia" of Sir Andrew Clark.

These fecal tumors are often of large size and not accompanied by constipation, and may be due to pressure as in the case of Mrs. G., aged 46, of Wasioja, Minn. She had an abdominal tumor which was diagnosed by several surgeons as a double ovarian. A distinct mass being felt in the right side of the abdomen, as separate from the larger left cyst, and thought to be a second tumor, involving the right ovary. She was not constipated. Upon our removal, March 10th, 1888, of the ovarian cyst, the remaining enlargement was, with much difficulty, made out to be an enormous fecal impaction of the cæcum, which had existed for nearly two years, and was evidently due to the pressure, as it rapidly disappeared after the operation.

Typhlitis (or inflammation of the cæcum primarily) of sufficient magnitude to give rise to prominent signs locally, has been rare in our experience, and always the result of fecal impaction; the common catarrhal inflammations not producing the heat, redness and swelling which so often result in abscess formation.

The following interesting case, seen by the kindness of Dr. J. E. Bowers, of the Second Hospital for the Insane, is one of the few cases of pure typhlitis we have seen. The patient, 50 years of age, had been an inmate of the female ward for a number of years. For a week previous to the time she took to her bed, it was noted by the attendant that she appeared in pain, and walked somewhat bent, but made no complaint. Upon examination, a large, brawny, red swelling was discovered in the cæcal region and extending into the lumbar. Just above the anterior superior spine of the ilium was a dry brown scale resembling a bed sore, which was its nature, being due to internal pressure. The diagnosis of fecal impaction, with resulting typhlitis, diffuse suppuration and fecal extravasation, was confirmed by the post mortem.

We come now to a class of cases in which we believe the cæcum to be secondarily affected; these patients are usually young adults, and present more or less well marked symptoms of inflammation in the cæcal region. The attack is often preceded by digestive disorders and ushered in by vomiting, which ceases when the stomach is emptied of its contents. Locally there is some enlargement, pain and tenderness upon pressure. The general symptoms are those of inflammation, with quickened pulse and slightly elevated temperature. Constipation is the rule.

After several days and under appropriate treatment, many recover, but if instead of improvement, the local signs increase, with pain radiating down the thigh or into the testicle, the thigh flexed on the body and with symptoms of general prostration, pinching of the face and marked sympathetic disturbance, we feel that pus formation is probable; and if, added to these symptoms, chills, sweating, hiccough and a tendency to vomiting from obstruction, we recognize one of the gravest diseases we

ever meet, that of abscess involving the appendix, or a primary perityphlitis.

If this abscess rupture into the abdominal cavity, death results; if into the cæcum and thus outward, recovery is probable; if into the cellular tissue, a secondary abscess is formed, which in turn may rupture into the cæcum or other portion of the intestine, the bladder, or dissect its way upward to the surface and form fistulous tracts in any direction, and only too frequently into the abdominal cavity.

That a large proportion of these cases have their starting point in the appendix is proven, and in those cases which improve early we must conclude either that resolution took place or that the abscess containing the foreign body was early ejected into the cæcum. That this often occurs is rendered very probable by the cicatrices which are frequently found about the appendix among general post mortems where death was from other causes. The frequent relapse, after several months, in just this class of cases, resembles a pyosalpinx or a lachrymal abscess, and, like such, may be due to causes similar to the original and are seldom of the same gravity as the primary attack.

In the cases which progress further, we must conclude that the abscess, originating in the appendix, ruptured into the cellular tissue, forming a secondary abscess, which limited by adhesions and directed by resistance of tissues, requires our best judgment to control by surgical means. While many of these abscesses may spontaneously discharge into some viscus having an external exit, or even become superficial and open externally, such fortunate termination cannot be expected, and an operation or death is the result in most cases. In those appalling cases where death follows insignificant symptoms, the abscess in the appendix ruptures at once into the abdominal cavity, producing a fatal peritonitis.

No one symptom is always present in this disease, and

almost all of the usual signs may be absent, especially is this the case in the apathy of severe disturbance of the sympathetic system, where the dilated pupil of the eye, darkened skin, pinched features, quick pulse with normal or subnormal temperature, indicate the gravity of the process, more than the local signs. Tympanitic distension may also obscure the outward appearances. A fullness in the vault of the rectum on the right side is often found and the abscess has been opened here, and drained, notably by Edmund Andrews.

While the term perityphlitis does not express the exact origin of the disease, it is the one we have retained because in common use. Appendicitis would be the proper term.

It is not important to our patient to know whether the cæcum is primarily or secondarily affected, but it is important to evacuate pus early. How early? As soon as it can be detected. It must be apparent to all that if the dictum of some of our most ambitious surgeons, be followed, to operate in every case in three or four days, many will suffer from a formidable operation, unnecessarily. It is doubtful if many, who might be saved by operation, would die before the end of the first week; cases which die before this time can seldom be diagnosed before fatal peritonitis supervenes.

Management of Cases.

We enjoin absolute rest. Food of a light and easily digested character, and sufficient opium to relieve pain. Externally, hot fomentations are applied continuously, and in the later stages of convalescent patients, blisters are used to aid the resolution of remaining induration; if they be used early they tend to obscure the local signs, by masking the surface appearance and increasing the cutaneous hyperasthesia.

In suitable cases after we are satisfied that the adhesions

limiting the abscess are fairly firm, we administer an anæsthetic, (chloroform preferred as less likely to excite vomiting) and making an incision over the long axis of the tumor, dissect down to the peritoneum; if the peritoneum be reduplicated, in front of the abscess, any opening made into it is carefully closed with catgut and the dissection continued lower down. Upon reaching the mass of inflammatory tissue surrounding the pus cavity the grooved needle is most useful as a guide, but after entering the sac the point of the needle should be directed away from the intestines, as, when the abscess is incised, the intestines are forced rapidly down by the diaphragm and might be injured by counter puncture. After introducing a drainage tube of stiff rubber or glass, if a small slit be made in a piece of rubber dam and drawn over the projecting end of the tube, the pus can be conducted away from the wound and prevent soiling the patient. As a rule we do not wash out the cavity for a day or two, but let it discharge slowly.

There are a few mooted points worthy of attention, and one is in regard to the use of the hypodermic needle. We can only say that we have found it most useful in diagnosis and have seen no harm resulting. While the treatment of septic peritonitis of a surgical character is benefited by laxatives, we are certain that, in these cases where the peritonitis is local, and by forming adhesions, protective in its nature, laxatives are positively harmful, and by increasing peristaltic action tend to premature rupture and a fatal result. It should be remembered that Alonzo Clark, the great advocate of the opium treatment, was engaged almost exclusively in purely medical practice, and met with this form of peritonitis rather than surgical or puerperal.

In regard to primary laparotomy, we do not believe it good, sound practice, unless the abdominal cavity has been opened by the abscess; under which circumstance it is

demanded, and with thorough cleansing, suture and drainage, has saved life. The success of laparotomy in pelvic abscess in the female has seemed a parallel case, but while the peritoneum might deal with a small amount of pus in these cases, anyone who has seen the stinking pus and feces from a perityphlitic abscess would be willing to wait for adhesions to render the operation extra-peritoneal, rather than risk the slightest contamination of the peritoneal cavity.

Before citing a few illustrative cases we wish to call the attention to the comparative frequency of phlegmasia dolens, in one or both legs, as a sequela of perityphlitis, and would remark that we have never seen this complication follow true typhoid fever.

CASE 1.—M. B., age 28; Rochester, Minn. During the summer of 1885 this patient developed a typical perityphlitis, with moderate general symptoms and well marked local signs. On the tenth day there was a copious discharge from the bowels of pus and feces, with gradual recovery. Since this time he has had four similar attacks of lesser gravity up to one year ago. During the past year he has been entirely free from recurrence. This patient represents a considerable number of similar cases, though not all of so fortunate termination.

CASE 2.—Alice B., age 19; Rochester, Minn. In November, 1887, this young lady was suddenly attacked with great pain in the right iliac region, and shortly developed well marked symptoms of perityphlitic abscess. The temperature was unusually high, ranging from 103 to 104½, and in many respects resembled typhoid. There was no constipation during the entire attack. At no time was dullness, on percussion, marked over the cæcum, and rectal touch revealed the fact that the induration was on its anterior wall. At no time were we able to satisfactorily diagnose pus with the hypodermic needle or otherwise. On the fourteenth day there was discharge of pus

through the bladder and tedious convalescence, delayed by a plegmasia dolens of the left leg. The abscess evidently forming behind and internal to the cæcum which it elevated, and passing inward behind the bladder, pressed upon the left external iliac vein before opening.

CASE 3.—E. R., age 30; Rochester, Minn. This patient was seen in February, 1888, in consultation with Dr. H. H. Witherstine. He was in the second week of his illness, and presented typical signs of perityphlitic abscess, though we were totally unable to detect pus. During the third week the patient became much prostrated, bowels were not constipated, yet there was some nausea and vomiting of a character to intimate pressure and partial obstruction of the small intestines. On the twenty-third day of his attack the vomiting increased in severity and the constipation became obstinate. On the twenty-fourth day he vomited three pints of pus and feces, and several hours later like discharges took place from the bowels, with recovery. In this case the attachment of the abscess was undoubtedly to some portion of the small intestines near the stomach.

CASE 4.—M. P. R., age 26; Rochester, Minn., July 2, 1887. This man was seized with violent pain in the right iliac region, with general and local signs of perityphlitis. On the seventh day his condition became so critical that an operation was proposed and accepted. Deep dissection opened a large abscess cavity, which discharged over a pint of fœtid pus, with prompt recovery.

CASE 5.—E. M., Viola, Minn. This young man, 20 years of age, was taken on August 1st, 1887, with supposed cholera morbus. The nausea, vomiting and dysenteric discharges, of a greenish color, continued unabated in spite of treatment. During the succeeding six days his condition became worse, tympanitis developed, temperature subnormal and pulse continually above 130. With the exception of decubitus there was nothing to indicate

abscess, but on the eighth day his condition became so desperate that any chance of relief was to be entertained, and with but slight expectation of finding pus a hypodermic was indroduced in the cæcal region and withdrawn full of pus. An operation was immediately performed and over a quart of pus withdrawn, with complete recovery.

CASE 6.—L. Z., age 76; Rochester, Minn. In July, 1887, this old gentleman complained of soreness in the cæcal region, constipation and fever; during most of this month being confined to his bed with colicky pains, indigestion and general prostration. His constipation was relieved only by large doses of castor oil and turpentine, administered occasionally. The tumefaction in the cæcal region gradually increased upward and backward, became brawny, and was finally opened by deep incision. In the eighth week of his illness large quantities of pus of strong fecal odor were discharged. The incision was made over the gall bladder, being unusually high, but was at a point where deep fluctuation was discovered. The patient did fairly well for a month, but gradually sank and died from protracted suppuration.

This last is one of several cases where large quantities of pus have been removed by superficial incision several months after the initial attack, and in younger persons usually ended in recovery.

The cases from which this paper developed have occurred in the practice of my father, W. W. Mayo, my brother, C. H. Mayo, and myself.

THE TREATMENT OF EFFUSIONS INTO THE PERICARDIUM.

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Effusions into the pericardium occur under a variety of circumstances. The cases in which a few drams of serum are found post mortem, no symptom of heart disease having been apparent during life, need not occupy our attention. The fluid in these cases is poured out from the coronary and pericardial veins or from the heart itself, just at the time of or shortly after death. The quantity thus found has sometimes been as much as three ounces.*

The chief causes of pericardial effusion are:

First. Inflammation of the serous membrane which furnishes plastic matter and serum, in proportions which vary according to the character of the inflammatory action.

Second. Those conditions which lead to a transudation of the blood elements into the cellular tissue, and into the various cavities of the body.

Third. Wounds of the pericardium, or of the heart itself. This is denied by some authors.

The diseases with which pericardial effusions are most frequently associated are, acute articular rheumatism, chronic nephritis, pyæmia, scarlatina and other exanthematous diseases, and inflammation of the pleura and lungs.

According to Duroziez,† rheumatism is the most frequent cause of pericarditis as well as endocarditis, and cases have been recorded by Hennock‡ in which the pericarditis preceded the disease in the joints. Some recent

* Ziemssen's Cyclopedia, vi, p. 665.
† L'Union Medicale, 1887.
‡ Deut. Med. Zeit., 1887.

writers have named diphtheria and erysipelas as causes, and Champiel* reports a case associated with latent tuberculosis. Broca† reports a case in which osteo myelitis was the cause, and Da Costa one of apparently idiopathic origin.

Fortunately the result in most cases is that the fluid is absorbed and little trouble is caused. In more severe cases the effusion increases until the pericardium becomes so distended as to cause most distressing and dangerous symptoms, when the tide luckily turns and the fluid steadily disappears.

In the third class the accumulation continues in spite of all medicinal treatment, and unless relieved by surgical interference it must prove fatal. This is the class to which I wish to draw particular attention.

The medicinal treatment in vogue for pericardial effusion may be briefly summarized as follows:

The application of leeches over the region of the heart, followed by cotton wool or a poultice sprinkled with belladonna and chloroform liniment, is suitable during the early and painful period of an attack of pericarditis. Sibson claimed that the local bleeding, besides assuaging the pain, in many cases lessened the oppression in the chest and the difficulty of respiration. The advocates of leeching do not claim that any marked effect is gained over the amount of effusion, the force or extent of the heart's impulse, or the friction sound.

Blisters applied over the heart are frequently employed. Although there are those who condemn them as useless and at times hurtful, I have found on more than one occasion very marked benefit from their use. Cold compresses, frequently changed, or a bladder of ice is much lauded by French and German authors. Gendrin keeps a bladder of ice over the heart for three or four hours till the

*Bull. de le Soc. Anat. 1887.
†Bull. de le Soc. Anat. 1887.

pulse and temperature comes down to normal, to be reapplied for shorter periods as these rise from time to time.

Digitalis is a valuable remedy in the early stages; it renders the action of the heart regular and steady. With decided effusion diuretics are our main dependence. Squills and acetate or tartrate of potassium are most employed. Forty grains of iodide of potassium can be given daily with repeated blisters. Hydrogogue cathartics, when they can be borne, are of great value. With marked depression stimulants should be used.

Certain cases, however, resist all these remedies. The pericardium becomes over-distended with fluid, causing suffocation and threatening death. Then it is that the case comes within the domain of surgery, and the operation of paracentesis of the pericardium is imperatively demanded.

This operation was first proposed by Riolan* as long ago as 1649, and so far as history informs us was first performed by Romero of Barcelona. Merat informs us that the faculty of medicine of Paris did not allow the report of these cases to be printed in their transactions lest this most delicate operation should thus be sanctioned (Roberts). The date of these operations is a matter of doubt, but from the fact that they are mentioned in Merat's work, which was published in 1819, Romero must have operated before that year.

The difficulty of making a differential diagnosis between pericadial effusions and other affections, the feeling that the heart was too delicate an organ to allow the rude approach of instruments, and the fact that grave errors were made by some eminent surgeons, threw the operation into disrepute. Desault† mistook a pleuritic effusion for a pericardial dropsy and operated. The fallacy was revealed at the autopsy. The application of the stetho-

* Riolan: Eriehiridion Anat. Lib. III, Lugduni Batavorum, 1649.
† Desault: Oevres Chirurgicales Recueilliers, par Bichat, T. II, 1798.

scope to diagnosis and the success attending operations for pleuritic effusions encouraged physicians to attempt tapping the pericardium, and now and then an operator bolder than his contemporaries was able to report a successful case. Up to the year 1880, when Dr. J. B. Roberts, of Philadelphia, wrote his monograph on the subject, he was able to collect 60 cases of the operation, of which 24 were successful and 36 fatal.

Five years ago I had the satisfaction of rescuing from imminent death a patient whose pericardium I tapped and from it removed 32 ounces of fluid. A report of this case appeared in the British Medical Journal of October 27th, 1883, from which I will take the liberty of reproducing a few words in order to connect the operation with the after history of the patient:

Mrs. K., aged 30, came under my care three weeks after the onset of an attack of rheumatic fever. She was unable to lie down. Her face was pale, anxious and œdematous, the breathing short and panting; the heart's action tumultuous and its movements were communicated to her clothing. On examination of the chest a dull area was found over the pericardial region, extending from the right edge of the sternum towards the left side for about eight inches, and from the seventh intercostal space to the level of the upper margin of the second rib. A loud and distinct to and fro murmur at the apex, and a harsh systolic murmur at the base, were the sounds heard on ausculation. The pulse was small, irregular and 120 per minute.

The patient was placed in a semi-recumbent position and chloroform very cautiously given. I then made a preliminary incision through the skin and dissected down carefully between the ribs. The point chosen was the fifth interspace on the mammary line. No impulse being felt with the fingers in the wound, I pushed a moderate sized aspirating needle through the remaining tissues, and

feeling that I had entered the cavity, withdrew the stilette. The fluid refused to run freely. Just as I was preparing to enlarge the opening for the purpose of introducing a tube a jet of fluid escaped, and by persevering for some time the cavity was emptied; the dull area over the heart was reduced to its normal size, and the patient, though extremely weak and inclined to faint, was very greatly relieved. The fluid withdrawn measured 32 ounces. Shortly after the operation she could lie down on either side with comfort, and draw a deep breath without inconvenience. The pulse fell to 100 and became more full and regular.

All went on favorably for a few days, when the area of heart dullness was found to be increasing, and with this the other symptoms, which indicated a reaccumulation of the fluid. Iodine was applied over the præcordial region, and a pill containing one-sixth of a grain of elaterium given at night. Copious watery discharges were produced which continued for several days. During this time she suffered intense thirst, but abstained from fluids as much as possible. Under this treatment a marked diminution of the area of dullness and a great improvement in the breathing took place.

Twelve days after the operation she was able to undertake the journey to her home, a distance of 200 miles. At the end of six weeks she could walk half a mile without much inconvenience, and did a fair share of the work about her father's farm house and dairy. For two years she suffered from palpitation, owing probably to pericardial adhesions. Her sufferings from this source were never very great, and in a letter a few weeks ago she was able to state that for the past twelve months her health has been excellent.

Although this case has convinced me that when milder measures have failed and the pericardium is over-distended with fluid, causing suffocation and threatening death, the

proper course is to throw away all drugs and operate, I will not promise, as some do, that it is a simple and safe operation. I have very vivid recollections of the anxious moments I spent while watching the fluid drain slowly away, the heart at one time beating furiously against the trocar, at another failing in its action and threatening to stop forever, the patient now falling back with widely dilated pupils, apparently dead, and again rallying into signs of life. Such can scarcely be regarded as a safe and simple operation, yet it is a perfectly justifiable one, and he who looks on and sees his patient die of pericardial effusion without operating falls far short of his duty to his patient and to himself.

The anatomical relations of the parts must be borne in mind. The base of the heart is fixed and immovable, the apex is free and becomes elevated and tilted forward when the pericardium is filled with fluid. Hence it is that the auricle, the most vulnerable part, whose tender walls might easily be pierced with a trocar, is moved out of the way and the more impenetrable wall of the ventricle is presented in the track of the instrument. The puncture has sometimes been made on the right side, along the sternum, but the patients have died suddenly. In one case the trocar, which penetrated the third intercostal space near the sternum, passed directly into the right auricle. In another the instrument remained engaged in the adhesions in front of the right auricle and stopped the heart's action.

The most suitable point for puncture is usually in the fifth interspace just above the sixth rib and about five or six c. m., (2 to 2¼) inches to the left of the median line of the sternum. The advantages at this point are that, first, it is outside of the line of the internal mammary artery; second, the intercostal space is wide at this place; third, it corresponds with the notch in the border of the left lung; fourth, is low enough to preclude wounding the

auricle; fifth, high enough to avoid the diaphragm; sixth, it does not approach the point where a fibrous band joins the fifth and sixth costal cartilages. The best instrument for this purpose is Roberts' improved trocar, and care should be taken to attach the aspirator as soon as the needle gets beneath the skin.

The greatest danger of the operation is the danger of delay. Exhaustion, pulmonary engorgement, pericardial changes and degeneration of the cardiac muscle may render permanent relief impossible.

Since operating upon the case already mentioned three others, in which the pericardium was enormously distended, have come under my observation.

CASE 1.—A young man, aged 20, suffered from a mild attack of rheumatic fever, followed by pericarditis with effusion. His physician, the late Dr. McLeod of Economy, N. S., having tried the usual remedies without success, sent for me requesting that I would come prepared to operate. Recollecting the good effects produced by elaterium combined with abstinence from fluids, I delayed operating. One-sixth of a grain of elaterium was given, and although tormented with thirst, the patient bravely abstained from fluids. The effect was very marked. Large watery stools were produced, the area of pericardial dullness rapidly diminished, and in a week the fluid had disappeared.

CASE 2.—Miss M., aged 22, a teacher, had rheumatic fever, which yielded readily to salycilate of soda until the sixth day, when effusion into the pericardium was noticed. The fluid soon reached as high as the first interspace, caused frequent fainting, great distress and a pulse of 140. The thirst was intolerable. Three successive blisters were applied and iodide of potassium and digitalis were given internally. As long as the patient was allowed to drink freely no good results followed this treatment, but as soon as she abstained from fluids the effusion be-

gan to disappear, and continued to do so till all signs of it had gone.

CASE 3.—J. H., aged 12, attacked with rheumatic fever July 21st. Progressed favorably until August 9th, when pericarditis with effusion set in. Diuretics were of no avail. The fluid increased until it reached as high as the lower border of the first rib. Suffocation and heart failure threatened to prove fatal, and nothing but paracentesis seemed to hold out any hope. The parents having a great dread of the operation, it was postponed and blisters were applied; iodide of potassium and digitalis were given in full doses, and abstinence from drinks was enforced. In twenty-four hours improvement was noticed, and she steadily went on to recovery.

The question arises, had the abstinence from liquids anything to do with the absorption of the pericardial effusion? I think it had. Thirst is but a sensation, a local manifestation of the general state of deficiency of water in the tissues of the organism. Diuretics or hydrogogue cathartics still further decrease the quantity of water in the tissues. Stop the supply of fluids by the mouth and the system will draw upon the reservoir stored up in the pericardium.

My observations have led me to the following conclusions:

First. In cases of pericarditis with moderate effusion, diuretics, blisters and iodide of potassium afford the best results.

Second. When the effusion is excessive and threatening to prove fatal, hydrogogue cathartics, if the patient be strong enough, or diuretics if the patient be weak, combined with abstinence from drinks, will often remove the

If these means fail the operation of paracen-
be unhesitatingly performed.

MENINGOCELE.

Malformations of the cranial bones, with protrusion of their contents, are not so frequent that the details of a case which has recently fallen under my observation will be devoid of interest to this Society. I was called by Dr. Thomas, of Minneapolis, to see a child recently delivered by him with a tumor projecting from the back of its head. The mother is a primipara in good health. The father is also in good health, a member of one of the professions. There is no history of monstrosities in either family.

The tumor was the size of a hen's egg—insensitive, fluctuating, flabby, covered with hairless skin, livid here and there as if about to ulcerate. It was connected with the head by a short pedicle the thickness of the thumb, at the median line just below the occipital protuberance. The finger could be easily pressed into an opening in the skull where the two halves of the occipital bone had failed to unite. A firm mass seemed to partially block the opening. Pressure produced no symptoms. There were no other deformities. The child seemed well nourished and slept well, though it cried a good deal without apparent reason. The child was now five days old and growing stronger. We decided to continue support and pressure already instituted by Dr. Thomas by means of a hydrocele bag and bandage.

At the end of six weeks the tumor increasing, ulceration threatening and the parents becoming urgent, we decided upon more radical procedures. At the first operation, after chloroforming the child the cyst was tapped with a fine aspirator needle and about an ounce of clear serous fluid was drawn off. Some blood also flowed through the needle. The fluid was thin, straw colored, and did not coagulate on contact with the air. No further examination was made, so that its identity with

the cerebro-spinal fluid is not established. The cranial opening could now be even more distinctly felt through the invaginated tumor wall, and also the small mass partly filling it. Pressure and support was again applied. No symptoms followed.

At the end of a week the cyst had refilled. We tapped again as before with the same result, except that the fluid was redder than before. I now attached the negative pole of six cells of a McKintosh galvanic battery to the needle within the sac and allowed the stream to flow through some twenty minutes. A light ovarian clamp was applied to the pedicle with moderate pressure. Pressure and support was applied as before. After forty eight hours the clamp was removed. The sac seemed to have again refilled; its walls were blue, œdematous and doughy; a very slight ulceration had occurred at the pedicle. I am not aware that electrolysis has ever before been tried in these affections. Though this single trial failed, I am not convinced that it would not give better results in repeated and larger doses.

After a few days waiting, no improvement following our efforts, the child becoming fretful and the parents importunate, we resolved to take the risk of removing the growth altogether. This we did after the method first suggested by Dr. T. Holmes, and described in his book, Surgical Diseases of Children. The clamp, its arms covered with tubing and absorbent cotton, was first applied and the pedicle boldly cut through in such manner that the skin was left considerably longer than the deeper parts of the pedicle. The skin flaps were united over the pedicle by a continuous catgut suture. The pedicle showing a tendency to slip out of the clamp, two hare-lip pins were passed through it. An iodoform and gauze dressing completed the operation. After seventy-two hours the clamp was removed. Union seemed pretty complete; there was no protrusion of cranial contents.

Four days after, at the second dressing, some sloughing occurred at the edge of the stump. The wound healed, however, without further accident.

The child, now four months old, is large and strong. The stump, an inch in width and projecting a half inch, still adorns his occipital protuberance. I pass the tumor for your inspection. Its walls are much thicker than at birth. This change of the use of the clamp and electrolysis through the cysts can be made out, the time of amputation passing through a possible third whose cavity is filled with a blood clot.

Meningocele is defined by Rosse as a hernia of the membranes of the brain in which the pia mater, protruding through an opening in the skull, pushes and carries with it the accompanying portion of the dura mater. He further states: "The cause is not yet sufficiently demonstrated to enable one to trace the symptoms or diagnosis of meningocele. On all sides it is admitted to be very rare, and some even doubt its existence." The more frequently occurring tumors of this sort he describes under the term "hydrencepalocele"—meaning that the brain tumor is accompanied by ventricular dropsy.

Now in my case it is evident that no brain tissue is in the tumor, nor is there the least sign of hydrocephalus. I can conceive that this tumor is made up of multiple cysts, leading off possibly from the meninges, but having no open connection with the arachnoid space. Incision going through one of these cysts, in this case we should be in the dark as to their origin. The very success of the operation makes me think this is a plausible explanation of the tumor. It will be noted that compression, puncture and electrolysis failed to diminish the size of the tumor. The clamp was effective in forming a pedicle that now fills the opening in the skull. The objections to its use are inconvenience in retaining it in place in the dressings and the danger of sloughing.

SARCOMA OF THE DURA MATER.

F. A. BLACKMER, M. D.

Patient, Geo. Buckley, aged 37 years, farmer, American and married. In February, 1886, he began to notice a small tumor on the top of the head, which was mistaken for an abscess and opened. Later on he noticed that he saw double; that when he counted his nine cows he had eighteen. The tumor gradually grew larger, till, when I saw him in April, it was half as large as an orange. It pulsated synchronously with the heart. The man's health was fine. He remembered he had received a bruise on the top of his head some time before.

He had consulted Dr. Wedge, Dr. Wilcox, and Dr. Kean, and finally the diagnosis was reached that it was an anurismal-varix, Dr. Wedge believing that it communicated with the brain. It was decided to extirpate it, but before the time came the man went to Chicago and saw Prof. Gunn and Dr. Fenger. By this time a more definite diagnosis was possible, and Dr. Gunn decided that the tumor extended into the cranial cavity, but informed Mr. Buckley that he did not know the nature of it, except that it was vascular.

August 8th, with the aid of Drs. Wedge, Wilcox and Snyve, I ligated the two occipital and posterior temporal arteries. Slight pressure was applied by means of a rubber bandage, but this could not be borne. Pulsation nearly ceased in the tumor for a few days after this proceeding, but the poor fellow insisted upon a complete removal, which was attempted on the 15th of the same month. After making an incision across the tumor from before backwards, through the scalp and fascia, it was separated from its investments and found to communicate

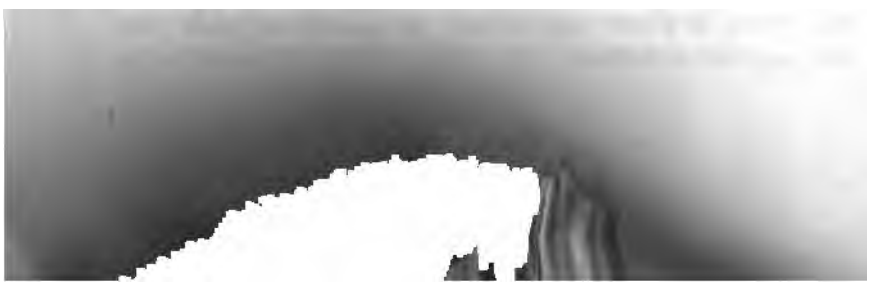
with the dura mater by an opening about the size of a silver dollar. The edges of the opening through the skull were quite carious, but most of the bone was absorbed away.

At this time it was thought best not to proceed with the operation, especially as the patient had not been informed that the case might terminate fatally. The incision did not heal, but remained open and presented an ugly appearance. The tumor grew rapidly, and the patient suffered greatly from pain and pressure.

November 3d, 1886, at the urgent solicitation of the patient and friends, assisted by Dr. H. H. Wilcox, I made an eliptical incision through the scalp, including all structures that looked in any way malignant, for the purpose of removing the entire mass. The hemorrhage from the scalp was quite profuse, but lasted only for a short time. The operation was progressing rapidly when the patient began to show signs of collapse. The ether was withdrawn promptly, but within ten minutes the patient breathed his last.

By permission of the friends I removed the balance of the tumor, and Dr. Wilcox secured a section of the skull, which I will offer for your inspection. The tumor was of a grayish, ashy color. It was very feebly organized, and did not contain blood vessels. It would pull apart if you attempted to lift it up. It was attached to the dura mater, but the attachment was so feeble that it peeled off like putty, leaving the dura mater smooth and natural.

An extended account of the case can be found in the *Northwestern Lancet*, March 1, 1887.



EXCISION OF THE ANKLE JOINTS.

F. A. BLACKMER, M. D.

July 10, 1886, little Eddie Farrel, aged two years, was standing in the high weeds in the edge of the wheat field and holding up his hands for his father, who was mowing weeds with a mowing machine, to take him up. The sickle cut the right ankle joint entirely across, and took off a section of both tibia and fibula, above the malleoli, about one-fourth of an inch thick, just missing the arteries. The left ankle fared differently. A section of the astragalus was shaved off, three sections of the tibia and fibula, each about three fourths of an inch thick, were shaved off. The sickle played back and forth in the joint till the soft parts were a mass of jelly, and the pieces of bone hung only by their jagged edges and corners. The foot only held by the tendo-achiles and the soft parts back of the ankle. Twenty-one pieces of bone were taken out of the wound.

The right ankle was stitched up, drawn together firmly with a rubber adhesive plaster, a plaster of paris cast applied from the foot to the middle of the leg above the knee. After the cast was applied, a piece of it was cut out over the ankle so that most of the wound could be seen. This opening in the cast was filled with carbolized cotton and secured with a roller. In the left ankle the tibia and fibula were beveled from before backwards, and made to fit exactly to the astragalus. The entire ankle was removed, together with about two inches of tibia and fibula. The soft parts were trimmed off and stitched together accurately, a rubber bandage was drawn from one side of the leg to the other under the heel, holding the bones in exact apposition. A plaster of paris cast was applied as before.

The right ankle healed with but very little suppuration, and nearly a perfect joint resulted. The left ankle suppurated considerably, great difficulty was experienced in keeping the parts clean as it seemed imprudent to remove the plaster cast. In about four weeks the cast was removed, and the external wound was perfectly healed except two fistulous openings, which healed in a few weeks.

A paste-board was well soaked and moulded around the ankle, and the boy allowed to creep about. He soon began to walk. There is now considerable elasticity to the foot, and he walks without limping enough to be very noticeable.

LAPARATOMY FOR INTUSSUCEPTION.

F. A. BLACKMER, M. D.

November 28, 1886, I was called into the country, 20 miles, by Dr. Twyford to operate on a little girl 9 years old, for obstruction of the bowels. Four days before she began to complain of a severe pain in the abdomen; her bowels were obstinately constipated. Every domestic remedy had been tried before Dr. Twyford saw her. By the time I reached her, stercoraceous vomiting, and all the signs of obstruction were present. Tympanitis was very great.

Putting the patient under ether, I made an incision from the umbilicus to the pubes. As soon as the peritoneum was divided, the intestines protuded with such force and violence and took us so by surprise, that they were all on top of the abdomen before we could catch them in the hot towels we had prepared. After considerable searching the obstruction was found to be an intussusception a little below the illeo-cæcal valve. There

was general peritonitis, and the mesentery was agglutinated to the structures around. When the obstruction was relieved, by drawing the bowels apart a large quantity of pus gushed forth, so that in a moment the bowels were swimming in it. This was thoroughly sponged out, a drainage tube inserted, and the wound closed.

She rallied well from the ether, but died the following day.

AMPUTATION OF FOREARM.

F. A. BLACKMER, M. D.

Nov. 27, 1886, Curtis Shay, an employee of the Minneapolis & St. Louis Ry, had his arm crushed below the elbow. It was amputated two hours after the accident. I used great pains to make the flaps fit accurately. Every uneven place on the surfaces to be approximated was cut off with scissors. Care was taken not to include anything but the arteries in the ligatures. Finally, when the flaps were trimmed satisfactorily, sponges, soaked in carbolized water, were inserted between the raw surfaces and left till all oozing ceased. The flaps were then stitched together without any strain on the sutures; the adhesive plasters were drawn carefully so as not to get them too tight. The whole was then covered with carbolized absorbent cotton, and secured by a roller. The dressing was removed in four days, and the wound was found to be healed without a drop of pus.

The young man went about town with the boys the same as before. This case seems to teach the importance of fitting the flaps accurately; of not tying other tissues with the arteries; of drawing your sutures only tight enough to bring the parts in close apposition; and of applying an antiseptic dressing that will exclude the air.

GYNÆCOLOGY.

F. A. DUNSMOOR, M. D., CHAIRMAN.

THE ETIOLOGY OF CHRONIC OVARITIS—ITS RELATION TO TAIT'S OPERATION, WITH THE REPORT OF TWO SUCCESSFUL OPERATIONS.

A. MACLAREN, M. D.

The propriety of Tait's operation, so called, in certain chronic inflammatory diseases of the ovary and fallopian tube, is so well established on sound surgical principles that it is entirely unnecessary for me to enter upon a discussion of the operation as a justifiable surgical procedure.

Like many other operations, it has been subjected to severe criticism, when the fault lay in the operator and not in the operation. It has been either improperly performed or patients have been operated upon who received no benefit, or who might have been relieved by a less radical course of treatment. But this does not disprove the fact that a certain number of women would be consigned to a life of misery and chronic invalidism, perhaps insanity, if not relieved by this same operation.

I have purposely confined this paper to Tait's operation for the relief of ovaritis, leaving out the various inflammatory diseases of the tubes which also call for this operation,

for two reasons: first, that I may economize your time; second, that I may emphasize the fact that in a large number of cases the chronic ovaritis is the permanent injury remaining after a salpingitis; the patient having recovered from the inflammation of the tubes, but with the ovaries hopelessly crippled.

It seems probable that some of the unjustifiable operations of the past may be accounted for by the chaotic state of our knowledge on the subject of the etiology of acute and chronic ovaritis.

UTERINE DISEASES.

The writer of one of our best modern text books says: "Chronic ovaritis is often a complication of uterine disease, and often results from prolapse." As this sentence occurs under the heading "Etiology of Chronic Ovaritis," we must infer that the meaning of this first clause is, that the uterine disease is the cause of the complicating ovaritis. To say the least this is a very loose and indefinite statement. The only uterine disease which can produce either acute or chronic ovaritis is septic endometritis. The second clause of the above sentence, "and often results from prolapse," is also a mistake, again confounding cause and effect. When an ovary becomes inflamed, congested and increased in size, as is always the result in acute inflammation, and is also the first stage of chronic inflammation, it usually becomes prolapsed from its own weight, dragging upon and stretching the ovarian ligaments; but to say that the prolapse of itself can produce either acute or chronic ovaritis is certainly a flight of imagination.

COLD AND VIOLENCE.

Catching cold, external violence, blows upon the abdominal wall, and falls, are all given as causes of ovaritis by different authors. That any of these causes can produce ovaritis is very doubtful; so doubtful, indeed, that

in looking for the cause of an ovarian inflammation in any given case we may safely lay them all aside.

FEVERS.

The exanthemata, typhus and typoid fevers and rheumatic fevers are given as causes of chronic ovaritis. Probably ovaritis is sometimes so produced, but I am sure that the number of cases must be very limited. In my short experience I have never seen such a case, and I find but very few reported cases.

CELLULITIS.

Pelvic cellulitis and pelvic peritonitis are usually combined in the same case. Taking it for granted that a certain inflammation was originally cellular, then the broad ligament will be the seat of a secondary inflammation—usually an adhesive peritonitis. In such a case the peritoneal coat of the ovary will usually become inflamed, and we will have an acute ovaritis. Such an ovarian inflammation usually clears up with the abatement of the acute stage of the cellulitis, but occasionally ovarian adhesions combined with the physiological activity of the ovary carries the inflammation on into a chronic ovaritis.

PERITONITIS.

Peritonitis, if general, will produce an inflammation of the peritoneal coat of the ovary. The ovaritis is then but a part of the general disease. As a rule peritonitis is either an accompaniment, or, more properly, a symptom of the ovaritis. The poison which causes the ovaritis also produces the peritonitis.

SEPTIC ENDOMETRITIS.

Under this head and starting from this cause will be found the great majority of all cases of ovaritis. In nearly every case we will be able to find, by close questioning,

that the first symptoms of ovaritis are preceded by a metritis, and that this was caused by the passage of a dirty sound, the use of tents, a dirty surgical operation, a gonorrhœal infection, or a puerperal septic poisoning.

When septic matter passes through the uterus and follows the mucous membrane lining the fallopian tubes, and enters the peritoneal cavity, there is set up a peritonitis either local or general, depending on the amount and intensity of the septic poison so discharged. When the inflammation becomes general the case will probably end fatally, if the peritoneal cavity is not immediately opened, washed out and drained like any abscess cavity.

If the poisoning be less in amount, adhesions will form and shut off the inflammation from the general peritoneal cavity; there will then result a pelvic abscess or an abscess of the ovary. If the discharge of pus from the tube take place at or near the menstrual epoch, when the fimbriæ of the tube are adherent to the surface of the ovary, or in the intermenstrual period if the pus pass on to the ovary, the inflammation will then particularly attack this organ, and as a result we will have either an abscess or an inflammation of the ovary.

In Delafield & Pruden's handbook of pathological anatomy and histology of 1885 we find the following under the head of Oophiritis: "Inflammation of the ovaries occurs most frequently in the puerperal conditon, either as part of a general peritonitis or as a primary affection." "Inflammation of the ovaries unconnected with the puerperal condition is not common, but it may occur in connection with acute or chronic peritonitis, or perimetritis."

From these statements we see that ovaritis is found post mortem in the great majority of cases after a puerperal septic poisoning. My observation has led me to fear child-bed fever in women who have suffered or are suffering at the time of delivery from gonorrhœa, and the question occurs to me in this connection, if a certain

number of puerperal inflammations of the endometrium, tube, ovary and peritoneum are not due to gonorrhœa, which may have lain dormant as a gleet, as a chronic gonorrhœa or a leucorrhœa, and is lighted up afresh by the confinement, and easily passes to the peritoneum through the now patulous patulous fallopian tubes?

GONORRHŒA.

Aside from the puerperal period, the greatest number of cases of ovaritis follows a gonorrhœal poisoning. Nearly all recent authorities are agreed upon this point, in so far as it affects acute gonorrhœa. But the position of Noegerath that septic metritis, salpingitis, peritonitis and ovaritis could follow a latent or chronic gonorrhœa, is not so universally accepted.

Like all other septic inflammations we see cases of gonorrhœa of different degrees of intensity. One man suffers from the severest form of acute gonorrhœal poisoning, while another man with his first clap has little or no inflammation. They are due to the same poisoning, in fact may have been contracted from the same woman, the connections having perhaps taken place the same day. This is especially true of gonorrhœa in women. The acute stage of the inflammation may attract little or no attention and the woman go on to have a chronic gonorrhœal inflammation, which is passed over as a leucorrhœa or as an endometritis. Let me state a case in point:

Mr. M. contracted gonorrhœa from an illicit intercourse; before he was aware that he had the disease he had connection with his wife and she contracted the disease from him. His attack was of the severest type, hers was very mild indeed. The mucous membrane of the vulva and vagina was hardly inflamed at all. A mild lucorrhœa and a slight attack of urethritis were the only symptoms which led her to ask for advice. Despite active treatment

she went on to a septic endometritis, and later to a pelvic inflammation.

Reviewing the etiology of chronic ovaritis, we find that the majority of all cases follow puerperal septic poisoning, and that nearly all the remaining cases are produced by a gonorrhœa.

A word as to the diagnosis and prognosis of chronic ovaritis in reference to Tait's operation. The symptoms are not diagnostic, because ovaritis is produced by and therefore combined with other surrounding inflammations, such as cellulitis, salpingitis, etc. The only true diagnostic points are the physical signs which we get from the bimanual examination. When the ovary is rolled between the left index finger in the vaginal vault and the right hand pressed deeply into the anterior abdominal wall, we will find that it is somewhat enlarged, that it is very tender, and we will produce the sickening pain which is truly characteristic. Painful defecation, painful and profuse menstruation and dyspaneunia, are all diagnostic symptoms to be well considered in making a diagnosis.

The prognosis of a chronic ovaritis is not good. Many cases are undoubtedly cured by long courses of local combined with general treatment. The surest cure follows a pregnancy. I have now under my care a young lady who contracted gonorrhœal ovaritis during the first six months of her married life, her husband having a stricture and a slight gleety discharge when married. She was under the care of one of the most eminent surgeons in the East for nearly a year. He advised a Tait's operation, to which she would not consent. At the end of a year the ovarian tenderness was so much improved that she returned to her husband. The ovary was still large, very tender on pressure, and lying prolapsed in Douglass' cul-de-sac. She soon became pregnant, her husband's gleet having been cured. One year ago she was deliv-

ered, and to-day she is entirely cured of her ovaritis. The ovaries are now of normal size, and lay out of harm's way at their normal level.

All cases of chronic ovaritis, even though they cannot be cured, do not necessarily call for Tait's operation. The severity of the symptoms and the effect of the disease upon the patient's nervous system must be the points to guide us in advising our patients.

In conclusion, let me briefly give the histories of two cases of chronic ovaritis in which the urgency of the symptoms led me to perform Tait's operation.

Case I.

CHRONIC OVARITIS FOLLOWING PUERPERAL POISONING.

Mrs. N., aged 36, mother of six children; last confinement in November, 1886, when she miscarried at the fourth month. This, her only miscarriage, was followed by a slight attack of child-bed fever. Rise in temperature and pulse. Lochia light colored and quite offensive, with pain particularly referred to the right side. Mrs. N. was confined to her bed for six weeks and never again regained her health, nor was she able to leave the house until after her operation performed some eight months after her miscarriage.

In December, 1886, one month after miscarriage, her condition was as follows: Menses profuse, occurring at least every three weeks, duration six days. Pain before and during the flow. Suffers from very severe headaches, with intense soreness of the scalp. Is sleepless and excessively nervous, making it necessary to send her children away from home.

Examination shows: Bilateral laceration of cervix, with erosion of os; uterus retroverted; left ovary prolapsed, enlarged and tender.

After months of persistent and careful local treatment,

keeping her confined to her bed for the greater part of the time with no relief, Tait's operation was advised and eagerly accepted.

Aug. 19, 1887, assisted by Drs. Stone, Wheaton, Spencer and Wells, I removed both ovaries and tubes. Incision 2½ inches long. Left ovary was found adherent to Douglass' cul-de-sac, about the size of a hen's egg, containing several small cysts. The fimbriæ of the left tube was adherent to the surface of the ovary. Right ovary was small and cirrhotic. Silk ligatures, which had been boiled in 1 to 500 bichlor. solution, used for the pedicles; a continuous stitch of juniper oil catgut used to sew up the peritoneal wound, and three silver stitches taken through the skin and muscles; 1 to 2000 bichlor. solution used on sponges and hands. The instruments had been first washed in 1 to 30 carbolic acid solution and then passed through the flame of a spirit lamp. I prepared my own sponges, first soaking them in dilute muriatic acid and then washing them in running water, and finally in a 1 to 500 bichlor. solution, in which they were kept until used.

The patient's temperature never went above 100.5 F., and this was on the eve of the second day. Pulse never above 110. On and after the third day temperature remained below 100. The urine was drawn but twice during her whole convalescence, and but three ¼-grain suppositories of morphia were used during the same time. Bowels were moved on the third day by enema.

Ten months after operation—June 1st, 1888: Patient reports herself as being better than at any time since her first child. Walks for miles without pain, and can now perform all her household duties—not light by any means. Has menstruated once since the operation. Uterus is in normal position, no tenderness or thickening, and her sexual life is now perfectly normal.

Case II.

CHRONIC OVARITIS FOLLOWING GONORRHŒA.

Mrs. R., aged 29. First seen January, 1888. Married seven years ago; one child, three years old; never pregnant but once. During the first week of married life Mrs. R. commenced having pain in external genitals, painful and frequent micturitions and a creamy white purulent discharge. Was confined to her bed. She had a severe attack of pelvic peritonitis. She soon entered Dr. Emmet's private hospital in New York. He advised her that she had pelvic cellulitis and peritonitis, which she would probably never entirely get over. The inflammation of the bladder and urethra soon necessitated the opening of the bladder and permanent drainage, and of local applications to the inflamed viscus.

Mrs. R. lived irregularly with her husband for four years, when she was divorced, intercourse having become too painful for her to submit longer. The brother of Mrs. R. tells me that Mr. R. had a stricture and a gleety discharge before marriage. He was told by his physician, however, that there would be no danger in his being married.

Examination shows: Right ovary large, exquisitely tender and prolapsed; uterus retroflexed and but slightly movable.

Mrs. R. is a confirmed invalid, and spends over nine months of every year in bed. Suffers from the most severe pain in side and back, especially at menstrual period. Sleepless and excessively nervous; cannot walk or sit without aggravating her pain. Genneral and local treatment gave her no relief, and after five months of fruitless work I advised a Tait's operation.

May 9, 1888, assisted by Drs. Wheaton, Epley and Wells, I removed both ovaries and tubes. Peritoneal wound two inches long; cavity opened fifteen minutes.

Right ovary adherent to posterior fold of broad ligament, which was rolled over upon it. Ovary considerably enlarged, the size of a small hen's egg. The stroma was congested and the seat of a fibrous hypertrophy. Left ovary was small and cirrhotic.

History.—On the morning of the second day the temperature reached 100. It immediately dropped, and on the morning of the the third day was normal, and continued normal until the 9th. Mrs. R. passed her own water; was moved in bed from one side to the other, and I moved her bowels on the third day by a calomel purge, followed by a saline cathartic.

It is too soon to predict what the result of the operation will be over her ultimate recovery, but I think she will soon be a well woman. This is certain, that she, like others of her class, can now thank God and Tait that there is a hope of deliverance from that lifelong horror, chronic invalidism.

TREATMENT OF INEVITABLE OR INCOMPLETE ABORTION.

J. C. ADAMS, M. D.

Those conversant with current obstetric literature know that it is only since 1870 that progressive practitioners have gradually abandoned the "let alone" policy, under the teaching of such men as Penrose, Linsk and Munde. That there is yet a considerable number of physicians who adhere to the precepts of the older authorities, such as Ramsbotham, Cazeaux and Leishman, not to mention eminent American writers who are not fully committed to

the new departure, may justify me in briefly sketching an experience included within the past seventeen years.

Abortion occurring spontaneously within a week or ten days after the expected menstruation is regarded as a mere delay, and no importance is attached to slight increase of pain and discharge. Up to the tenth week ovum and decidua are usually expelled without alarming hemorrhage or septicæmia; but to this rule there are so many notable exceptions that it cannot be said that even the earliest abortions are absolutely free from danger of either hemorrhage or septicæmia. I have never met with *alarming* hemorrhage during the second month, but such cases do occur, (see Medical Record, 1877, p. 232,) and, if consulted, should not hesitate to empty the uterus with antiseptic precautions.

CASE I.—Mrs. M., aged 38, multip.; began to lose a little blood two weeks after expected period. About the time next period was due she was taken with a severe rigor, followed by high fever. On the second day this was repeated. I was then called. I put her in the left semi-prone position, introduced the Sims speculum, dilated cervix with No. 18 conical urethral sound, removed the putrescent decidual debris with a dull curette, and finally swabbed the uterus with 20-100 carbol. solution and tinct. iodine, and cleansed the vagina with a weaker carbol. solution. No more chills; speedy convalescence.

As all obstetricians know, the great majority of cases concerning which we are consulted occur between the tenth and nineteenth weeks inclusive. The ovum is then too large to be easily expelled by the immature uterus. The anatomical relations of placenta and decidua are intimate and not easily severed; the membranes are delicate. The result is that the feeble spasmodic uterine contractions rupture membranes; the fœtus escapes, blood is freely poured out from the region of the partially separated placenta, and complete separation is slow because

of the anatomical difficulty, because of the lack of the stimulus of distension, and because of the feeble force of the undeveloped uterus. Doubtless if the woman should live long enough the secundines would be swept out by the current of her own blood or by putrescent disintegration. Is it necessary in her interest that she should be subjected to the danger of having her health impaired or her life lost by hemorrhage or septicæmia?

CASE II.—Mrs. S., aged about 40, multip.; was taken with a violent flooding on the afternoon of Sept. 18, 1880. Being absent in the country I did not see her until her condition had become alarming. Hemorrhage had ceased, but she was almost pulseless. By the aid of brandy and ammonia administered hypodermatically and orally reaction was fairly established by 11 P. M. I then proceeded to remove separated placenta and membranes. Uterus was swabbed with tinct. iodine and vagina with 3 per cent carbolic solution. Convalescence slow but steady.

CASE III.—Aug. 5, 1885, called to Mrs. ——, Swede, multip.; found her almost bloodless, pulse only perceptible; bleeding had ceased. I administered brandy and ammonia at frequent intervals until there was a little improvement, and then packed the vagina as firmly as I could without greatly disturbing the patient, and continued stimulants until next morning, when her condition admitted of removal of the placenta, which I did precisely as in the foregoing case. Very tedious convalescence.

CASE IV. — Oct. 20, 1884, Mrs. S., multip., aborted towards the end of the fourth month. On the fifth day, late in the afternoon, I was called in by Dr. ———, who told me that he saw her for the first time on that day, at 1 P. M. He said he had given her about 6 drachms ergot at intervals. I found her pulseless. All our efforts to secure reaction failed, and she died within two hours after I came. The bleeding had ceased. Touch revealed the placenta in the mouth of the open os.

CASE V.—Sept. 6, 1874. Mrs. G., multip., had an abortion one week ago. The physician in charge of the case left it to nature. I was called on the evening of the seventh day rather because the patient was anxious than because of physical ailment, although there was slight elevation of temperature. Not having instruments with me, I gave quinia sulph. ℈i. Placenta was expelled during the night. A violent attack of peritonitis set in which imperilled her life for six weeks.

CASE VI.—Mrs. W., aborted June 20, 1885. Saw her in consultation with a doctor on the 25th, who had himself taken the case from another physician. Temperature 105.5°, pulse 140; woman phthisical. Having informed the husband that case would probably be fatal, I removed placenta under chloroform, swabbed uterus with 20 per cent carbolic solution and tinct. iodine, and advised frequent uterine and vaginal irrigation. The woman lived one week.

CASE VII.—Mrs. S., multip., aborted towards the end of the fourth month, Jan. 3, 1885. March 15th I was asked to take charge of the case. She was anæmic and troubled with continuous oozing, alternating with larger hemorrhages. She was taking iron to build her up(?) Satisfied by the history of the case and vaginal examination that something was retained, I dilated with a steel branched instrument and scraped with a dull curette, and removed with Munde's placental forceps at least one-half a teacupful of adherent fragments of placenta, and swabbed uterus thoroughly with tincture iodine. This ended the bleeding. She was so utterly anemic that digestion was greatly impaired, and the most careful management was necessitated for weeks.

CASE VIII.—Mrs. C., 2d para, aborted about the end of third month. The physician in charge asked me to visit her with him on the fifth day, about 11 A. M. Pulse 120, temperature 103°; foul vaginal discharge. I learned

that she had a severe chill followed by a temperature of 104° on the previous evening. Rudimentary placenta and putrescent decidua were removed in the semi-prone position, and the uterus and vagina were cleansed antiseptically as in above-mentioned cases. The temperature became normal within a week.

I have cited these cases to exemplify the danger of either hemorrhage or septicæmia from trusting to nature to expel secundines.

We meet with two classes of cases in recent abortions:

(*a*) Bleeding is profuse, but the ovum or secundines are not yet separated, and the os is not much dilated; for instance:

CASE IX.—Mrs. ———, Swede, primip.; was taken with profuse hemorrhage on the evening of Dec. 29, 1887, in the fourth month of gestation. Ovum entire and os undilated. Tamponed greater and lesser cul-de-sac and the whole of the vagina firmly with carbolized wads of cotton. Next morning I easily removed secundines through a sufficiently dilated os.

CASE X.—Miss ———, erring daughter of very worthy parents, was taken with a dangerous vaginal hemorrhage at the house of her sister. The conditions were the same as in the previous case. I tamponed as before. On removing the packing next morning I found a four-inch fœtus in the vagina, and easily removed the secundines.

I could cite many cases of the same kind. The tampon in this condition fulfills all indications. It restrains hemorrhage until the cervix has had time to dilate; it hastens dilatation by restoring to the fundus uteri the stimulus of distension through the blood confined in its cavity; it creates reflex uterine irritation through vaginal distension.

(*b*) The placenta or ovum is separated and the bleeding has ceased, and there is nothing to do but empty the uterus through the open os as soon as the woman's condition will admit. In the presence of hemorrhage or

septicæmia, or with an open os and the placenta or decidua visible, few hesitate as to the course to be pursued. But suppose we are called later, when the os has closed, the bleeding ceased, and the patient is only anxious? Shall we leave her—say ten miles from town—with the statement that all may or may not be right; that she must be careful; that if this or that takes place we must be called promptly? This is to leave her and her family the prey of anxiety, with the patient's mind depressed and imagination active. Fictitious if not real ills will soon arise, and you may be assured she will not sweeten the family board or take on flesh fast.

CASE XI.—Nov. 10, 1884, Mrs. R., old multip., had an abortion in the fourth month. I saw her at noon on the 12th. Bleeding had ceased and the os was closed. I could not satisfy myself, either by inquiry or physical examination, that the abortion was complete. I dilated with steel branched instrument and explored with small dull curette, and was able to assure the anxious family that all was right, and there would be no future trouble. The woman was up and doing her work in ten days.

CASE XII.—Nov. 18, 1887, Mrs. B., 2d para, had an abortion in the third month. Two doctors had been in attendance. I saw her on the 22d. I found nothing in her case abnormal save a temperature of 100°. The os was gaping and the discharge *not* fragrant. The family wanted an assurance from me that all was right. I replied that I could not give it without an examination of the cavity and the privilege of doing whatever might appear necessary. Consent was reluctantly given by the patient. I dilated the cervix with No. 18 urethral conical sound, and removed at least a wineglassful of necrosed decidual debris; cleansed uterus and vagina antiseptically, and had the pleasure of saying the danger was over.

I have only once met with criminal abortion as late as the sixth month. In this case, which I completed Sept.

9, 1887, the woman, multip., had been flowing moderately for about ten days. Evening temperature 102°, pulse 120, membranes ruptured, foul sanious discharge. Next morning I gave chloroform, placed her in Sims' position, ascertained nates presentation, seized a foot with Munde's placental forceps and delivered trunk without difficulty. Using too much force, I separated the trunk from the head at the level of occiput. However, after a few unsuccessful efforts with forceps I removed the head with a small blunt hook which caught on the edge of the foramen magnum. The removal of placenta and antiseptic cleansing followed. Recovery was satisfactory.

Ordinarily I do not use vaginal irrigation during the puerperal week. The septic fountain cut off, the streams fail; and I do not like to take the risk of having the untrained nurse open up a new fountain. The sum and substance of the matter is this: Whether the fœtus be six or twenty-four weeks old, if it be dead, do not leave the ovum or any part of the membranes in the womb to menace or destroy the woman. If the cervix is dilated the way is clear. If it is not dilated—hemorrhage or no hemorrhage, septicæmia or no septicæmia,—dilate, with a tupelo or steel instrument, and empty uterus, cleansing antiseptically. It is scarcely necessary to say that at least a week of rest in bed and appropriate constitutional treatment should be enforced and adopted in all cases.

A LAPAROTOMY FOR THE REMOVAL OF A RETROPERITONEAL TUMOR.

JAMES H. DUNN, M. D.

The following case may, from several points of view, be worthy of a brief report; at any rate, being the last of a series of eight consecutive laparotomies without a death by one engaged, as city physician, in the most varied general practice, including erysipelas and other infectious diseases, I venture to do so.

Mrs. Meyers, German, housewife, aged 30, mother of three children, the eldest ten, the youngest three years, was sent to me by Dr. Karn of Big Stone City, D. T. She arrived and entered St. Mary's Hospital Jan. 3d. Examination elicited the fact that she was pregnant, apparently near full term, and presented a peculiar mass of tumors in the right hypochondriac, abdominal, iliac and femoral regions. Four hard, smooth, apparently encapsulated growths could be readily distinguished which were intimately attached to each other. In Scarpa's triangle lay a tumor the size of a man's fist attached by a large connecting link to those above; in the anterior abdominal wall of the right inguinal region a growth the size of the fœtal head, *per vaginum*, a mass could be made out the size of the fist, lying upon the internal iliac fossa; while the right hypochondriac region below the liver was occupied by a tumor the size of a large child's head. These growths were powerfully united together by strong connecting links of a growth identical with themselves. They were first noticed by the patient three years ago, at which time they were very small. They have grown steadily but slowly. They had been somewhat painful all along, but

much more so since pregnancy had advanced beyond the third or fourth month.

It had been feared that the growth occupying the iliac fossa, projecting as it did down to the true pelvic basin, would prove an obstacle to the advance of the child's head, and she had been sent to me with a view to performing Cæsarian section. Drs. French, Abbott and others kindly examined the case and gave it as their opinion that the child could be born *per vium naturalis*, and we decided to await the advent of labor. Jan. 15th labor pains began, and, assisted by Dr. Barber, I kept an eye upon the progress of the slow and tedious labor. The head was slow to engage, being evidently hindered by the above-mentioned tumor, but after forty-eight hours from the onset of pains, with appropriate periods of rest secured by the administration of chloral hydrate, delivery was completed without instrumental aid.

The patient made a good recovery, and five weeks later, the infant having been weaned, at her request I took under consideration the removal of the growths. I believed them to be fibro-sarcoma and wholly extra peritoneal, and thought it possible to remove them without great injury to the peritoneum; a view which proved correct as regards the three smaller ones but impracticable in the case of the larger one occupying the hypochondrium, a correct estimate of the size and location of which could not be made out before the others were enucleated.

In view of their slow growth, relation, benignancy, apparent encapsulation, great discomfort and lethal outlook, and confiding in the probability of their extirpation without serious destruction of the peritoneum or, under the circumstances, extraordinary risk to life, I undertook their removal. A long incision was made over the one occupying the right inguinal region, and after a very tedious dissection of the abdominal muscles and fascia,

which were much changed and intimately connected with the growth, the latter was enucleated without injury to the peritoneum, although a large section of that membrane was laid bare; next, the incision was extended down through Scarpa's triangle, and that was enucleated without difficulty, Poupart's ligament being divided; then a careful dissection after much difficulty enucleated the one occupying the iliac fossa, baring the internal surface of the ilium nearly to the ilio-pectineal line. Thus far the operation had gone as I had anticipated, except that the dissection had occupied much more time than had been estimated.

Before dissecting out these growths it had been impossible to judge accurately of the exact location and size of the fourth and largest growth. Enlarging the incision upwards and backwards towards the lumbar region, the latter was attacked and much time was consumed in an unsuccessful attempt to dissect it out without wounding the peritoneum, but it was now found that the ribs behind prevented any access to the growth except at the expense of that membrane immediately behind which it lay and with which it was most intimately invested. Evidently the operation must have been abandoned or completed regardless of the destruction to the peritoneum. Hence it was turned out peritoneum and all, and after its removal the lower border of the liver, the colon and small intestines, came readily to view. Indeed, such an extent of the parietal peritoneum was destroyed and irregularly lacerated as to render the proper closure of the peritoneal cavity extremely difficult. However, by much patience and many stitches (between 40 and 50 silk) it was closed, care being taken to approximate the internal surfaces of the same. A tampon of iodoform gauze was stuffed into the cavity of the iliac fossa and the external opening reduced by stitches to dimensions which would admit of

removal of the tampon and perfect access to the deeper parts of the wound. The operation, closing and dressing occupied three hours and forty-five minntes. The abdomen was dressed with sublimate gauze and Mackintosch.

On the second day the tampon was removed and the wound irrigated with corrosive sublimate solution, 1 to 2000, a large drainage tube inserted and abdomen redressed. At the end of a week the next dressing was made, the drain was removed and the wound was found pretty well closed, suppurating slightly. From this time out the wound was daily irrigated and dressed; occasionally a stitch was washed out from the small cavity between the skin and peritoneum. This cavity was required to heal slowly by granulation in order to get a firmer support to the extensively destroyed abdominal walls.

During the first week after the operation there was no rise of temperature above 100° F., and it was only three times above the normal and then but briefly. During the second week the patient had an attack of winter cholera, then almost universally present in the city. Possibly this diarrhœa may have been caused by irritation about the numerous stitches inserted into the peritoneum just at the margin of its reflection over the ascending colon. At any rate before the diarrhœa could be controlled she was taken with severe pain and tenderness in the abdomen and the temperature went up to 103°. A hypodermic of morphine relieved the pain and the temperature soon fell. As the diarrhœa became controlled during the next three days, patient's condition improved and she made a good recovery.

Now, four months after operation, the patient is well and presents no signs of ventral hernia. Had the tumors been removable without gross injury to the peritoneum, the operation would not have been a serious one. Add to such a wound the grave injury to that membrane, with

three score of stitches communicating with a large and irregular cavity running in every direction in the connective tissue of the thigh, abdomen and pelvis, and the situation was not only a critical but to me a novel one, quite unlike anything that I have before seen.

Perhaps many would regard such an operation under the circumstances as unjustifiable, but Mrs. M. is quite happy over the result, and I believe her expectation of life has been materially increased by it. It occurs to me, too, that in such an operation as this the successful issue is far more dependent upon antiseptic dressing and treatment than are ordinary ovariotomies, in which asepsis and technique are all important and dressings of minor import. But in this case a large, irregular external wound might easily serve through the many deep stitches to initiate suppuration within the abdominal cavity.

Mention having been above made of erysipelas, I cannot resist a digression to add that there has been something of an epidemic of so-called idiopathic erysipelas in this city during the past winter. In most cases the face, head and neck are the parts involved. I have met with such cases nearly every week all winter. We do not admit erysipelas cases to the city hospital, but nine cases have developed in the course of typhoid diseases such as enteric fever, dysentery, etc. Yet, strange to say, in no instance has erysipelas ever invaded any wound in the institution since it was opened last November, although operations of great variety and severity have been done; nor has a wound become infected in any of the several amputations, abdominal sections and other operations performed during the time at St. Mary's Hospital, or those done outside of hospitals. Whether this escape has been due to chance or to antiseptic wound treatment I cannot say, but it borders upon the wonderful that in the city hospital, while medical cases have developed in every part of the house,

not a single surgical case has occurred. To my way of thinking, our mascot is in the sublimate gauze, etc., of antiseptic wound treatment.

I have, of course, not handled erysipelas patients more than necessary, have observed great precautions as to disinfection, and, before undertaking capital operations especially, have begun on the previous day already to prepare my hands and person by repeated washings with soap and bichloride solutions. In other words, I have acted upon the principle that thorough artificial disinfection, if done conscientiously and scentifically, renders one much exposed to infectious diseases safer than the less exposed individual who depends upon time and chance for his purification.

OBSTETRICS.

S. C. M'CORMICK, M. D., CHAIRMAN.

CHAIRMAN'S REPORT.

Fully relying upon the aid of at least a portion of the members of the Minnesota State Medical Society, I issued a polite call April 2d, 1888, to each and every member to send me, on or before May 20th, a paper pertaining to obstetrics. I have been rewarded by the receipt of but two responses, which I herewith gratefully acknowledge. I regret perhaps more than any of you can that I am so entirely thrown upon my own resources, and can only now at this late hour add that if I had known of the limited amount of material to be obtained in this way I would at least have consumed more of the ample time allotted me in the preparation of a more suitable report, concluding it, perhaps, with an addenda setting forth fully the obligations of members to add to the interest of our meetings by contributing papers for the various departments, if for no other purpose as an act of kindness to the chairmen.

With this explanation I will offer a few cursory remarks on post-partum hemorrhage and its treatment, craving your indulgence for the quantity as well as the quality of my communication; also submitting with the same the

papers furnished by two of the most courteous members of our Society.

Observations as to Post-Partum Hemorrhages.

There are very few subjects in obstetrics which are so frequently discussed and with such varying interest as that of post-partum hemorrhage. Few of the unwelcome incidents attending parturition are more appalling in their nature or more dangerous to the patient than the sudden, continued and exhausting hemorrhage, following what is supposed to be the happy termination of childbirth. Under no other circumstances is the physician thrown so utterly upon his own resources, without opportunity for preparation, consultation or reflection, or even time to send for remedies or assistance. Fortunately there are few accidents which are so completely under control, and the physician should always be prepared for this emergency by having everything needed at hand.

It will of course not be expected or necessary for me to discuss the entire field as to the various causes, theories, etc., upon this subject. My convictions being to a great extent against theoretical papers, I will simply outline some of the causes as they appear to me, and give a few hints in regard to the treatment used by myself for the relief of this alarming and perhaps rapidly fatal casualty.

Post-partum hemorrhage may sometimes be anticipated by cardiac disease, also by sharp and strong pains of short duration, with irregular and somewhat tedious intervals between the pains. It is doubtless often due to a partial paralysis of the abdominal muscles, as well as the uterine walls after a protracted and severe labor. A well known as well as eminent medical teacher remarks upon this subject: Post-partum hemorrhage is due to one of three causes:

First. A failure of the uterus to contract when there is no mechanical interference, termed atony or inertia.

Second. It may be due to some mechanical cause preventing free and normal contraction of the uterus, as fragments of placenta, clots of blood, or some other foreign material.

Third. It may be due to laceration of the cervix or the fundus or vaginal walls.

The diagnosis and cause of post-partum hemorrhage is generally sufficiently easy to determine. I am inclined to believe that it is sometimes induced by the early and repeated administration of opiates, a practice very common with many of our best practitioners. It is sometimes due to a hemorrhagic diathesis or constitutional predisposition to flooding, and again is the result of a long and violent labor. The flow of blood, whether slow or rapid, if persistent beyond what is known to be usual in these cases, should have prompt treatment for its relief. Continuous hemorrhage, whether external or internal, is accompanied by a small, feeble as well as a rapid pulse. If profuse, the pulse fails at the extremities, and syncope, either partial or complete, is a prominent symptom. This condition of the patient (syncope) may require attention, although it is sometimes of service, tending as it does, at least temporarily, to arrest the hemorrhage. The physician, however, must not relax his efforts to check as speedily as possible a profuse and continuous flow of blood.

A predisposing cause of post-partum hemorrhage may be an excessive quantity of liquor amnii. Whenever this is the case a good plan is to rupture the membranes in order to establish uterine contraction and expedite delivery. I believe this to have a good effect, preventing atony and dystocia, and the tendency to hemorrhage following delivery.

Proper management of the third stage of labor may prevent in many cases the liability to hemorrhage, and serious results may in this way be frequently avoided by the use of remedies which cause the tissues and orifices of vessels to contract or close, so that hemorrhage is absolutely impossible. A full dose of ergot at the beginning of the third stage is almost always a wise course, and assists very much in insuring a complete and clean delivery and probable safety. It is also a good plan to use gentle pressure, as well as friction over the fundus, and not wait too long for the delivery of the placenta.

I think it unwise ordinarily, and it is my practice not to wait more than ten minutes after the birth of the child before delivering the placenta, and it should be the rule to see to it that the delivery is a complete one. Always examine the placenta with a good light to see if it is intact; if deemed necessary wash the surface to make the examination more certain. In cases where hemorrhage is apprehended I always use a binder after delivery as a prophylactic.

Hemorrhage occurring after the lochia are supposed to have ceased is frequently the result of subinvolution, and if not very severe, hot water douches and small doses of ergot will doubtless soon relieve both difficulties.

The list of remedies is so long that I propose to call attention to the use of but a few I have tried and found to be useful. It is always well to know of remedies to be used in sudden and unexpected uterine hemorrhage, and as I have already remarked, it is proper and wise to go prepared, otherwise the patient may be beyond help before remedies can possibly be obtained. Common salt in teaspoonful doses is often quite effective, and is a remedy nearly always close at hand.

Twenty-drop doses of fluid extract of hydrastis canadensis every three or four hours is an invaluable remedy

in cases of persistent passive hemorrhage. Fluid extract of hamamelis is also quite useful locally as well as internally. As to how it acts I have no theory to offer; it is perhaps as difficult to determine or explain as to account for the curative property of many other drugs. We simply recommend it from having tried it repeatedly with very satisfactory results. Cloths wrung out of cold water and applied over the fundus may sometimes be used with advantage.

In using intra-uterine injections some degree of caution is necessary, as there is doubtless danger of actual forcing of the injection into the uterine vessels. A good plan is to insert a soft catheter into the womb while using the injection to allow the solution to escape during the process. A two or three per cent solution of the perchloride of iron can be used with perfect safety.

Afterwards the danger of septicæmic poison may surely be overcome by the use of warm water lotions freely used, either carbolized or otherwise, as may seem to be indicated. The effect of the iron seems to be tonic, styptic and contractile. Turpentine emulsion containing twenty drops to the dose every half hour is often used with good effect, and a hundred other so-called specifics might be mentioned.

In regard to the use of the tampon, I have for a long time held that it should *almost* if not *entirely* be discarded, believing that its use always paralyzes the already enfeebled efforts of the uterus, inducing a most dangerous state of inertia, and adding greatly to the already existing danger. We are frequently told by those who advocate its use that even after its application we cannot be too watchful, as the patient may very quickly lapse into a deep and irrecoverable collapse.

After the cessation of an exhausting hemorrhage it frequently happens that there is an alarming degree of

general weakness and lack of vitality, requiring prompt measures for its relief. The injection hypodermically of twenty drops of sulphuric ether is very highly recommended. It may be used every fifteen minutes until its effects are quite noticeable.

Professor Parvin, in speaking of post-partum hemorrhage and the use of this remedy, concludes by saying: "But whatever method may be resorted to for the arrest of the hemorrhage, it is of the first importance that the patient should be restored from her profound prostration, and among the means of this restoration probably none is so prompt and so effective as hypodermic ether.

DISEASES OF CHILDREN.

D. M. COOL, M. D., CHAIRMAN.

CHAIRMAN'S REPORT.

Mr. Chairman, Ladies and Gentlemen:

Being the time of year when the mortality among children reaches its maximum, and seeing in different journals the opinion of so many physicians, each one differing from the other in many essential points, I thought I would increase that difference by adding to the mass my mode of feeding a child during the first two years of its life, or until its double teeth had made their appearance, and the salivary glands were developed and were furnishing saliva in sufficient quantity to prepare starchy food for the next step in the process of digestion.

Edward Atkinson said, "Half the struggle of life is a struggle for food." Sir Henry Thompson says, "I have come to the conclusion that more than half the disease which embitters the middle and latter part of life is due to avoidable errors in diet." These errors begin many times when the child is but a few hours old, and is more frequently than otherwise continued during the second and third years of its life, thereby laying the foundation on which to build the future person. The child is poorly nourished, and as the result, is weak and unable to resist

atmospheric changes and the different diseases to which children are exposed, and death claims its victims by the thousands. Statistics for the year 1886 place the number of deaths at about 800,000 of all ages in the United States, of which about 500,000 were children under five years of age; and the question is asked why this fearful mortality? We all know that from the very beginning of life until the scene changes and the end comes, food is essential to the growth and development of our bodies.

In the early stages of fœtal life the ovum lives by absorption. After awhile the placenta forms, partly by the vascular tufts of the chorion, and partly by the thickened mucous membrane of the uterus in which they are entangled. The complete development of the placenta we will not attempt to describe here, but suffice it to say, that after its complete formation, and to a certain extent before, the fœtus is supported by the blood of the mother. Generation is not merely the quickening of a germ, it requires for its success a supply of material to be appropriated by the germ in building up its proper organization.

However we will pass over the balance of this germ life, with its own peculiar food, and enquire what should constitute the food of the child after its expulsion from the uterine cavity. It has now become to a certain extent an independent being, yet still dependent upon its mother or nurse for food and proper care during its infantile life. At birth the supply from the mother's blood ceases, and yet its organization is incomplete. Its structure is by no means finished. No function of its body at birth is fully developed except respiration and perhaps circulation. In this incomplete state the child remains dependent upon the mother's milk and care for its well being. Up to the birth of the infant the mother's blood has done all that was necessary, but now her milk must do the rest. Divine wisdom has so arranged this secretion that no

element of the body is wanting, and it is carried direct into the child's stomach, rich in all the material of growth. The progress of the child to the independent state is rapid.

In all warm-blooded animals the vital heat must be maintained in order to have health and activity. With the first breath a sort of internal combustion begins, and in order to its continuance, food must be supplied containing oil, that by the proper chemical union with the oxygen of the air heat may be evolved sufficient to sustain the temperature of its body. Without this fuel-food the heat of the body will decline, and if persisted in languor and death must follow.

Now what are the conditions of calorification? They are, first, good air, that is air containing a due proportion of oxygen; second, good blood, that is blood containing a sufficiency of combustible material; third, a sufficiency of good air in the pulmonary cells; fourth, a sufficiency of good blood in the pulmonary capillaries.

These four conditions are indispensible to full calorification, and if there be not enough of fatty matter in the blood, nor a sufficient impulse from the heart, the former conditions will be of no value. Two of these conditions are chemical, relating to the composition of the air, and of the blood; the other two are mechanical, relating to the performance of the respiratory and circulatory acts. These last are under the influence of the nervous system, and will vary with the nervous energy.

If then, heat is to be evolved in sufficient quantity, we must have not only enough oxygen in the air, and enough oil in the blood, but we must supply nervous energy of sufficient power to induce free respiration by means of muscular action, and strong contraction of the heart, that the blood may be forced rapidly through the capillaries of the lungs. With full respiration and active circulation a sufficiency of oxygen will be mingled with the blood to

furnish an abundant supply of heat. With deficient nervous power, this vigorous action of the muscles of respiration and circulation is impossible. All observation and experience settles this point.

Butter contains not only the fuel, but the necessary material for its combustion. It is a self-regulating article. Is the supply of fuel small, the consuming power is correspondingly reduced. With an increase of the consuming power coincides a proportional increase of the material to be consumed. From these facts we may readily understand how a child may be fat, and yet be deficient in strength and vital heat. Starch-fed children are sometimes fat, and are yet deficient in vitality and physical strength. If starch is digested, it contains no azote and cannot nourish the tissues of the body; having no phosphorous, it cannot supply the wants of the nervous system; it fails to produce general energy or vitality. Not so with the butter; the lecithine it contains excites the nervous system to efficient action, and all the functions feel its influence.

Let us examine the physical and chemical qualities of this food that we may see its fitness to perform this work of nutrition.

1st. It is liquid, and can be drawn in quantities as may be needed at a time. Its liquidity is indispensible, that it may be received by the child and digested.

2d. Its temperature is that of the body of the mother, consequently it does not chill and depress the child.

3d. The next want is material for growth and development. The child is placed in close relation with its food, rich in all of the elements of its own organization. These are at least sixteen in number, namely, oxygen, hydrogen, carbon, azote, chlorine, iodine, flourine, sulphur, phosphorus, silicon, potassium, sodium, calcium, magnesium, iron and manganese. Not only are these elements there, but they are in the proper organic combinations, albumen,

fibrin, olein, lecithine, potassium, phosphate of lime, chlorides and other most useful combinations.

From this we may infer the composition of milk. Not only do we find all the elements of the body, but we find them in the same combinations. Four protean compounds containing oxygen, hydrogen, carbon, azote and sulphur, enter into its composition; and what is more remarkable still, one of the salts (phosphate of lime) is found in such combination with these compounds, though itself insoluble, it may be readily absorbed and used in the formation of teeth and bone; it is thus freely introduced into the system in an available form. This union of phosphate of lime in large proportions with caseine, albumen and albuminose, is one of the most important and interesting in relation to the composition of milk.

We have referred to butter or the oily portion of the milk as a fuel food, and have mentioned some of its component parts; one of these however deserves and should receive a more careful consideration. It has long been known that the nervous system has a peculiar constituent, a phosphorized oil. Its presence in the young animal has been demonstrated by Gobley, who found it in the yolk of the egg, and it has been named lecithine. "It has been found in the human blood in the proportion of five ten-thousandths; in the blood of pregnant women ninety ten-thousandths has been found, and in the blood of the umbilical artery, seventy-five ten-thousandths." This oil is the special constituent of the nervous system, is furnished by the blood for the functional use of the system, and for its growth. It would therefore soon be exhausted unless a supply from without were obtained. In the event of such a failure, the most serious consequences might be expected. Not only would the nervous system cease to grow, and thus lose its relation to the rest of the body, but its activity would decline, and consequently the energy of all the functions of the different organs of

the body. With a failure of nerve force would coincide a failure of circulation, of heat, of digestion, of absorption, and of secretion. Indeed, every process would suffer from the want of this energizing agent, and weakened digestion would add to a still further diminution of the already deficient energy, and thus by mutually depressing interaction, the decline would continue until the termination of life from inanition. These serious results cannot occur in a case of normal lactation.

The needed lecithine is furnished by the milk in sufficient quantity to supply all the demands of the system. It is said an infant three months old receives about forty-six grains daily, or two pounds the first year. This it would seem when compared with the amount found in the blood to be in excess, it must be for the most part expended in nervous action, and not altogether in the growth of the nervous system; and when we take into account the almost incessant action of a child when awake, it is easy to account for this large consumption. The use of the butter is thus seen to be, to supply fuel food for internal combustion, fatty matter for the tissues of the body, and to supply the special constituent of the nervous system to be employed in its growth and activity. It was once supposed that sugar which the milk contains, was merely fuel food, but later physiological researches have assigned it to other and more important uses.

The butter and sugar contain no azote, and are therefore ill-adapted to the development of tissues of the body which contain so much of this element. It is not supposed that animals have power to convert an unazotized into an azotized compound. From what we know of chemistry we are led to believe that azotized combinations must of a necessity be in the food of all animals. In milk they form from one and a half to five per cent of the whole, or from thirteen to thirty-three per cent of the solid portions.

This statement is made for the purpose of showing the importance of milk as a food, many supposing it of little or no account in the nutrition of the body. The adults of nomadic tribes depend upon it to a great extent as an article of food. The vigor and rapid growth of young animals are strong witnesses of its importance. I think it may be safely said that under no condition is there so rapid and healthful increase as during the season when it is the sole article of food. In vigorous women, the secretion of milk is copious, the amount ordinarily furnished is from four to five pounds daily.

M. Guillot at the foundling's hospital at Paris, France, weighed children both before and after nursing, and found that the increase of weight varied from two to five ounces, in children under one month of age, and concluded that about two pounds and a quarter is the smallest quantity of good milk that would suffice for the daily nourishment of an infant during the first month of its existence, and the amount increases as the child grows older. An infant during the first year of its life, will require from twelve to fifteen hundred pounds of milk for its full and proper nourishment.

Milk differs in the amount of its constituents, but in analyzing different specimens of milk, and consulting various works on physiology, I find there are no two samples alike, but from my own experiments in comparison with others, I think we may safely say, that in a thousand parts of human milk it will contain, butter, 20.76; caseine, 14.34; sugar, 75.02; water, 889.88. In a thousand pounds of this milk there are twenty-six ounces of the various salts, of which nine ounces are phosphate of lime.

It thus appears that during the first year the child should receive from one hundred and ten to one hundred and forty pounds of solids. He may readily gain fifteen or twenty pounds in weight, and yet have a large residue to expend in the production of heat, and in the activity

of an energetic vitality. A child thus nourished can make teeth and bone without difficulty, its functional activity need never be suspended for want of material, atmospheric changes be successfully resisted and zymotic diseases have little power.

Where, in the whole range of animal existence will you find a more beautiful object than a healthy child? There is no happier animal in existence, nor is there anywhere a more regularly operating and uninterupted harmony of the vital functions. This is infancy as God designed it should be. It is infancy under favorable physical conditions. How few children progress thus steadily and rapidly during their first two years of life?

How commonly do we associate with infancy the idea of sleeplessness and fretfulness, and all manner of gastric, intestinal and nervous disorders. Why is it that teething does not mean as it should, the steady, silent, unnoticed development of the teeth, but salivation, fever, diarrhœa, convulsions and death? What other animal has God made that has trouble in teething? There is none.

It is not pretended that there are no other causes of disease in infancy but insufficiency of proper food; but there is strong reason to believe that four-fifths of the suffering during this period of life arise from this source; and how can it be otherwise? Look at our American mothers, and say how many of them can furnish daily three or four pounds of good milk to their nurselings. How many can furnish one hundred and ten to one hundred and forty pounds of dry solids during the first year of nursing? How many can satisfy or can meet the demands of even a feeble child?

A strong vigorous woman almost always loses weight while nursing her child. The milk draws away more than her digestion can replace, and the balance is taken by absorption from her previous accumulation. A lady should furnish about four pounds of good milk daily,

containing nearly five ounces of dry solids. Is it then surprising that so many mothers fail to supply enough food for their infants?

It requires great physical energy and powerful digestion to perform this work. How few mothers are thus endowed! If we may judge by the amount of food consumed by a vigorous woman during the period of lactation, we should decide that the labor of a working man is less exhausting than the function we are considering.

The cases in which natural lactation fail are so numerous as to excite the deepest concern. We must supply food adapted to the power of the child to digest and assimilate or we fail. It must contain all of the elements of the body, or some tissue will be found wanting. How often do we see the physician in attendance recommending to the frail mother, who finds it impossible to nourish her child, to drink ale or beer.

Now what is this drink? Often the vilest stuff imaginable, but when of good quality, what is it? It is one of the hydrocarbons, and only furnishes carbonaceous material or fatty matter, nothing more. How can it enable a mother to support her infant when it only furnishes three of the sixteen elements necessary to accomplish the work? Where is she to obtain the other thirteen? How much better that the mother should drink good pure milk.

It is a law as broad as the universe, that everything having life, both animal and vegetable, must have food suited to its period of development.

Take, if you please, two acorns, or two seeds of any kind, with your knife carefully open one of them, and remove the germ. Plant both germ and seed beside the tree that produced them. The same warm rich soil that furnished food for the parent tree is expected to nourish both of these: the acorn which you have planted whole, and the germ which you have removed. The one you

have planted whole contains the root, stem and leaves and food for the nourishment of the future plant, or in other words material for the growth and development of the young plant, until its roots are sufficiently developed to take nourishment from the ground, the same as the parent tree. The other consists only of the germ, which you have removed in its undeveloped state from the balance of the acorn, which contains the food nature has provided for its use, and you expect it to grow and live upon the food its parent tree lives upon. Of course it is apparent the effort will be a failure.

In the same way the effort to support and develop a child upon food nature did not design for its use, is almost always a failure. The law has been broken, and the penalty is sure to follow, while the heart-broken parents are comforted by being told, that "the Lord has given, and the Lord has taken away, and blessed is the name of the Lord."

It would do us good to look to the lower order of animals for the lessons. They obey the law and raise their young. With them death is the exception, while with us the mortality is fearful.

According to the lowest statistics throughout the civilized world, forty per cent of the children die before they are five years old. In the United States alone, as before stated, during the year 1886 there were about 800,000 deaths of all ages, of which about 500,000 were children under five years of age; 62½ per cent.

In the city of Chicago, during the last two weeks of June, 1875, there were over four hundred deaths among children under five years, nearly all from bowel difficulties. The report of the registrar of vital statistics for February, 1878, same city, contains the following: Total number of deaths 481; of this number there were 138 under one year, from one to two years 51, from two to three years 28, from three to four years 12, from four to

five years 14, total, 215, nearly fifty per cent of the whole number; and this is one of the healthiest months of the year. There was no high temperature to cause it. In 1875 from the middle of June until the middle of October, there was no week with less than 150 deaths among children, mostly under two years of age.

The health officer's report for the city of New York, during the year 1882, (and this is taken at random from their report, what I mean is, that it has not been selected because it was an unhealthy year, each year's report has about the same showing,) shows that there were reported 3429 deaths from diarrhœal diseases alone, among children under five years of age; and children over five years of age, same time, 571, in all 4000. Children were swept away by disease of the stomach and bowels. In the years of 1873, 1874 and 1875, from diarrhœal diseases alone there were 11,292 deaths, sufficient to inhabit a nice little city had they all lived. In their annual report for 1870, the board states, "The mortality from diarrhœal affections alone in children amounted to 2789, or 33 per cent of the total deaths for that year; 67 per cent of these deaths were in children less than one year old, and 92 per cent in those less than two years of age.

Every year health boards in all cities furnish similar statistics, and we might quote from the reports of any city with the same fearful ratio of deaths among children.

Now why this frightful mortality? The same kind hand created us all, both the higher and lower order of animals, and it is but fair to suppose he has as much love for our children as he has for those of a lower order. Why should they succeed and we fail? The answer is too plain, they obey the law and we disobey it.

In the health officer's report for the city of San Francisco, California, for 1874, the whole number of deaths of all ages was 21,171; of these there were 2210 among

children under five years of age; ratio per 1000, 57.1 per cent.

In some of the hospitals in France the mortality is frightful, while in others with a better regimen it is not nearly so large. "The mortality of children under one year was (I copy from the British and Foreign Medical Review) at Lyons 33.7 per cent; at Partheny of 153 foundlings 54 died before they were one year old; at another hospital, same place, out of 224 infants 197 or 80 per cent died before the end of the first year.

At Lyons the children were nursed, and this accounts for the small number of deaths in comparison with the other places mentioned.

It is not to be supposed that this mortality was wholly due to improper food, since many causes will suggest themselves as concurring to render the life of a foundling, and children in hospital, especially precarious.

The infant whose mother refuses to perform toward it a mother's part, or who by disease, accident or death is deprived of the food that nature destined for it, too often languishes and dies. Such children you will often see with no fat to give warmth and plumpness to their limbs, but few red corpuscles in their blood to impart a healthy hue to their skin, their faces wearing the lineaments of age, their voices a constant wail, their whole aspect an embodiment of woe. Give to such a child the food that nature designed for it, or a proper substitute, and if it does not come too late the mournful cry will cease, the face will assume a look of content, by degrees the features of infancy will disclose themselves, the limbs will grow plump, the skin assume a healthy hue, and health will be fully established.

From what has been said of milk, and its peculiar adaption to the wants of young animals, it follows of a necessity that nothing but milk can be proposed as a substitute for the natural food.

From Carpenter's Physiology, page 645, I copy the fcllowing: "It is very interesting to observe that milk contains the three classes or principles which are required for human food, viz., the albuminous, oleaginous and saccharine, and it is the only secreted fluid in which these all exist in any considerable amount. It is therefore, the food most perfectly adapted for the young animal, *and is the only single article* supplied by nature in which such a combination exists. Our artificial combinations will be suitable to replace it, just in proportion as they imitate its character."

The phosphates of lime, magnesia and iron, have a very important function in the nutrition of the infant, affording material for the consolidation of its bones, and for the production of its red blood corpuscles; and any food which does not contain these is deficient in its essential constituents. Dr. Foster remarks, that of all foods, milk is the most nearly allied to blood in its composition.

During the period of nursing (or at least the first eight or ten months) the food should consist of nothing but mother's milk. In this milk there is no refuse matter; all should be absorbed and pass into the circulation. No portion of the milk should pass through the intestinal canal during the first three months of the child's life.

According to Dr. West: "The stools of an infant should during the first few months of its life, consist only of the glandular excretion of the intestinal canal and of those emptying into it, namely, the liver, pancreas and the glands of their mucous surfaces."

What wonder, then, that the child's bowels should be irritated by the presence of foreign bodies such as lumps of curd, starch, granules, etc., etc., and that they should continue to irritate so long as these foreign bodies remain in contact with its surface.

In the absence of healthy mother's milk, what are we to do? What can we substitute for this food and have the

child remain healthy? The only kind of milk that in this country can be readily and certainly obtained, is that of the cow.

It cannot be supposed that milk adapted to the wants of a calf who is obliged to follow its mother, and designed by nature to take exercise, run and play almost as soon as it is born, and of a necessity requiring muscular development, and in order to acquire that must have food rich in nitrogenous material would be suited to the wants of a child, who does not require that muscular development, but on the contrary as we have tried to establish, does need the oily food for the double purpose of creating heat and the development of the nervous system. The calf is farther developed at birth than the child, and the milk differs in its composition accordingly.

Common observation agrees with chemical analysis in declaring that there is too much caseine, or muscle making material in the milk of the cow to be tolerated by the child. Being compelled to resort to this for food, how are we to make it available? The addition of water in order to reduce the caseine to the standard of mother's milk is the easiest way, and the one generally resorted to. But how much water must be used, and will watering do harm, are questions to be answered only by careful study of the milk and close observation of the child.

We have seen that human milk should, and usually does, contain to each 1000 parts:

Butter, 20.76; caseine, 14.34; sugar, 75.02; water, 889.88.

Cow's milk contains:

Butter, 38.59; caseine, 40.75; sugar, 53.97; water, 866.69.

Cow's milk therefore contains nearly three times as much caseine as mother's milk, but less than twice as much butter. In cow's milk the butter is to the cheese, as 100 is to 105; in human milk, as 100 is to 170. If then by dilution, we reduce the butter to 20.76, same as in human milk, we shall have 21.92 of caseine, or about 50

per cent more than is required. With such an excess of caseine, we cannot as a rule expect to succeed. Chymification fails to be accomplished, and it will thus pass through the intestinal canal, irritating as it goes. Debilitating diarrhœa and perhaps vomiting will occur and the attempt fail. This is the usual experience of those who use cow's milk for infants, and often leads to the abandonment of milk, and the substitution of farinaceous food.

If by further dilution we reduce the caseine to 14.34 as it is in human milk, we have 13.58 of butter, or less than two-thirds of the proper proportion. Such milk may for a short time seem to suit the child, but ere long it will be found that it does not thrive. The reason is plain: the right proportion of butter is 20.76; this warms a child and supplies nervous energy. But by withholding one-third you lower the temperature of the body, and deprive the nervous system of one-third of the special nerve food, the indispensible lecithine. Continue this food and there is but one result, starvation. Restore the full supply of butter and if matters have not gone too far for recovery, warmth and energy will gradually return, the downward progress be stayed, and vigor replace debility.

It is thus evident that by no mode of dilution can ordinary cow's milk be made a substitute for human. There will be in every case an excess of caseine or a deficiency of butter. So long as the butter is to the caseine as 100 to 105, instead of 100 to 170, so long must dilution fail to adapt it to the wants of the child.

But if the original proportions could be changed to that existing in human milk we might have hopes of success. We will proceed to show how this can be done. If we leave at rest ordinary cow's milk six or eight hours, and then remove the cream with about one-eighth of the upper portion of the milk, we find in it fifty per cent more butter than it as a whole contained. Examine this milk

and cream which we have skimmed off and in round numbers its butter is no longer to its caseine as 100 to 105, but as 100 to 170. If then by dilution we reduce the butter to 20.76 we have 14.34 of caseine, as in human milk. Not only may ordinary human milk be thus closely imitated, but the colostrum also. In the first few days of the child's life the cream only should be used, and this reduced by the addition of 25 to 30 or more parts of water to one of cream, or until the color becomes like human milk.

This food may well be styled artificial human milk. In chemical composition it most closely resembles milk of a healthy woman, and it offers to a child all it needs for growth, nervous development, warmth and activity. A careful observation of its effects for several years, in hospital as well as private practice, has led me to the conviction that it leaves nothing to be desired, and that on this food an infant may be reared with admirable results. By this we mean that health, uninterrupted health, with vigor and energy of the bodily functions, may be regarded as the result of this food. We mean that under its use dentition ordinarily will be a painless process, that the teeth will be strong and durable, that gastric and intestinal disorders will not follow its use as they so often do with farinaceous food.

How few mothers understand this; failing to satisfy the wants of their child, they naturally turn to cow's milk. Not understanding how to prepare it properly, a failure is apt to be the result; and the disheartened mother, aided perhaps by the advice of the doctor, resorts to pernicious food, and here again is another failure.

The thousand and one kinds of baby foods, such as Ridge's, Imperial Granum and a host of others, together with corn starch, arrow root, bread, crackers, and in short anything that grows out of the ground containing more or less starch, are not to be thought of as food for an infant

until the double teeth have put in an appearance and the child able to chew. Then, and not till then, does the child have saliva containing ptyaline in sufficient quantity to act upon the starch.

The starch which these foods contains must be insalivated in order to change them into sugar or dextrine. This contains hydrogen, 10 equivalents, carbon 6, oxygen 5; while the starch before being acted upon was composed of carbon 12, oxygen 10, hydrogen 10. This the child is unable to accomplish until the salivary glands are developed. These grow with the molar teeth, for the secretion is of no use until the child is able to masticate its food, and this is only done by the aid of the molars. Mastication and insalivation are essential in digesting farinaceous matter; without it fermentation is almost sure to follow, and then we have flatulence, colic, and either diarrhœa or constipation.

This is why children suffer so much during the second summer. Generally they are weaned, and have to depend upon artificial food. If not weaned, the mother is almost sure to feed it at the family table, and of the food she partakes of herself; and believing meat to be very hard to digest, and as she thinks must be well masticated, she withholds this and soaks the bread or crackers very soft before feeding the child, it not being able to chew, leaving nothing on the part of the child to be done only to swallow into its stomach what she puts into its mouth.

This is so universal, and diarrhœa is so common, that most mothers think it is better that the child's bowels should be loose during dentition, and this idea becomes the "scapegoat" to cover up the mistakes they make in feeding their children. I am afraid these mistakes are the results of the advice given them by their medical advisors. I have yet to read a work on diseases of children that does not commit the same error.

In Dr. Day's Diseases of Children, page 184, he says: "If the child has no teeth, corn flour and farinaceous food of all kinds must be forbidden, and milk in some shape be relied upon. * * * Too much stress cannot be laid upon the importance of feeding, and selecting the purest milk."

Again, same book and same disease, page 185, the very next page, he makes the astounding remark: "When the diarrhœa is acute and recent, soothing and unirritating diet is especially to be recommended, rice water flavored with cinnamon, or barley water, so that the intestines may have all possible rest. Sago, tapioca, corn flour, arrow root and chicken broth, are all articles of diet to be borne in mind!"

Some use the various kinds of animal broths; these are good so far as they go. With the first the child cannot masticate and insalivate on account of the incomplete development of the mouth, and failing in this at the beginning, it of a necessity is a failure all of the way through. With the latter it does not represent all of the tissues, especially the bones, and if depended upon for any length of time they become soft, easily bend, and you have curved spine and bow legs as the result.

The consequences are most injurious. Pallor, languor, debility, marasmus, tuberculosis, cholera infantum and dropsy of the head are some of the results of this insufficient and improper supply. These infants thus fed are unable to resist atmospheric changes, so that the winter's cold or the summer's heat are almost equally injurious; while the starving and wasting body offers to zymotic diseases an admirable nidus. Tubercular deposits frequently take place, and in all of these ways the mortality is fearful. Pestilence ever follows close in the footsteps of famine, and these starving children are swept off by thousands.

The lesson I would inculcate is this: Any food containing starch in any considerable amount, and thereby needing insalivating before it can be appropriated to the uses of the body, is not proper food for a child until it has double teeth and is able to masticate. If you have to feed a child, prepare the food from the cream and milk of the cow until it is ten months or a year old. As the child begins to exercise prepare the food with more milk, less cream and less water, and at this age it will be able to take clear cow's milk. At or about this age its food should contain more nitrogenous material, as by this time it will creep and perhaps walk; then meat may be allowed, as it needs the muscular development.

By this course much of the mortality may be avoided. How much better to do this than to spend months of anxiety over a starving, unhealthy child, that the doctor is striving to relieve by the administration of medicines, and the nurse or mother is breaking the law by the daily administration of improper food, such as oatmeal in some form, barley water and patent baby food.

We have tried to show that food has to answer two distinct purposes, the one to furnish material for growth of the body, the other to afford matter for the maintenance of its temperature. Life cannot long be supported except on diet in which the elements of nutrition and the elements of respiration bear a certain proportion to each other. Now in the proper food for infants the elements of the former are to those of the latter, according to Dr. R. D. Thompson, a celebrated English chemist, in the proportion of one to two, while in sago, arrow-root and tapioca they are only as one to twenty-six. In wheat they are in the proportion of one to seven. It is at once apparent that on such a diet the health if not the life of a child must of a necessity be sacrificed or most seriously injured.

The manufacturers of baby food tell us they have changed the starch into sugar, and that they have pep-

tonized the caseine of the milk and it must agree with your baby. If one-half pound of beefsteak was all that nature designed an adult to take at one meal and he should take a pound and a half, what would be the natural result? These predigested foods are in the same boat. They have left their food in the proportion of 100 to 105 instead of 100 to 170.

While the starch chemically changed into glucose we rebel against when our grocer puts it into his sugar and sells as his clear white drip syrup for our table, but it is all right for the baby. If it kills the little one it shows a lack of skill on the part of the doctor or it is a dispensation of providence.

THE SOLVENT POWER OF THE DIFFERENT PEPSINS OVER FIBRIN, WITH EXPERIMENTS.

R. C. TESCHAN, M. D.

In a paper read before the Medical Society of the State of New York, Feb. 2, 1886, Dr. A. Jacobi called the attention of the medical profession to papayotin as a solvent of the products of exudation in cases of diphtheria and croup, and reported some cases in which he had tried it with the best results.

Later there appeared in the medical press reports of a digestive principle recently isolated from the gastric juice, trypsin, which was claimed to be a solvent of fibrin, and that it might possibly replace the very expensive papayotin; but no reports of its clinical application have come under my notice so far, except as a remedy in cases of indigestion.

In order to test the efficacy of papayotin, trypsin and the allied pepsin in their action on albumen and fibrin, I made some experiments with a view to find the best methods of their clinical application in cases where fibrinous exudations are to be dissolved. In the first series of experiments I tried different brands of pepsin found in the market, I Fairchild's, II Jensen's, III Boudault's, IV Globe. Of these different brands I dissolved 5 grains of each in 1 ounce of water and 5 drops of hydrochloric acid. Then I pressed the white of hard boiled eggs through a No. 20 sieve, so as to get a medium fine mass, and mixed 200 gr. of this with each of the different solutions of pepsin and put it into vials. Over the sand bath I kept the whole mixture at a temperature of about 105° F., and let it macerate for two hours. After that I strained the solutions through a piece of muslin, weighed the residue and found the following: Fairchild's pepsin had dissolved 195 gr., Jensen's 140 gr., Boudault's 110 gr. and Globe a trace.

It will be seen that there is a very great difference in the peptogenic power of these different kinds of pepsin. While No. I dissolved 195 gr. or 98 per cent of the albumen acted upon, No. II dissolved under the same condition 140 gr. or 70 per cent, No. III 55 per cent, while No. IV did not show any effect. The slight dissolution of the albumen in the vial No. IV may be ascribed to the effect of the hydrochloric acid, while the stuff sold as (Globe) pepsin is perfectly inert, and resembles common glue in all its qualities.

My object was not to try how *much* albumen could be dissolved by a unit of pepsin in *any* length of time, but to find how *quickly* a given quantity of albumen or fibrin was dissolved by a sufficient quantity of pepsin or trypsin, and to compare their relative value.

Here I have to state that, on account of want of time and apparatus, the results of these experiments are not

to be taken as absolutely correct; but for the object in view I think they are conclusive, as they proximately show the strength of the drugs used and the way in which they can be best used at the bedside.

In the second series of experiments I compared the action of pepsin and trypsin on albumen and fibrin. The latter was prepared from cow's blood, washed and kneaded until it was sufficiently clean. Of this I chopped a sufficient quantity until it was nearly as fine as the albumen prepared as stated above. I dissolved 20 grains each of pepsin (Fairchild's) and trypsin (against 5 gr. in the first experiments) in 5 drops of hydrochloric acid and 1 ounce of water and had each act upon 100 gr. of albumen and fibrin for 1½ hours, at a temperature of about 105° F., and after straining the residue through muslin as in the first experiments I found the following: 20 grains of pepsin had dissolved 80 grains of albumen; the same quantity of pepsin dissolved 60 grains of fibrin, while 20 grains of trypsin dissolved 75 grains of fibrin. The result was not what I expected, as 20 gr. of pepsin did not dissolve half as much albumen as 5 gr. in the first experiment. It seems that the difference lies in the proportion of pepsin to the hydrochloric acid, and that a surplus of pepsin rather hinders the quick process of digestion.

Having found that trypsin in acid solution does not act very powerfully on fibrin, I tried a neutral and an alkaline solution and found that they are more effective than the former. I dissolved 15 gr. of trypsin in 1 ounce of water and added 5 gr. of bicarbonate of soda and the same amount of trypsin in one ounce of water without the addition of the soda. To each of these solutions I put 100 gr. of chopped fibrin, let it macerate for 1½ hours at a temperature of 105° F. and found that the fibrin was totally dissolved, and that there was no visible difference between the alkaline and the neutral solution.

Papayotin being very expensive, I made the experiments with it on a smaller scale, to be reported afterwards. Having tested the fibrin digestive quality of trypsin in a more or less artificial way, it remained to try its applicability to parts of the body by means of the brush, hand atomizer and steam atomizer. For this purpose I fastened fibrin to some pieces of glass in such a way that 100 gr. of fibrin covered about six square inches. Then I made a solution of ½ drachm of trypsin in one ounce of water and added 10 gr. of bicarbonate of soda. Of this solution I put 1½ drachms into the medicine holder of a steam atomizer and directed its spray to the fibrin spread on the glass. It took about four minutes to spray 1½ drachms of the solution of trypsin, and after five applications in intervals of fifteen minutes one ounce of the solution had dissolved 40 gr. of fibrin (40 per cent).

For the use of the hand atomizer we have to warm a part of the solution in order to compare its effect with that of the steam atomizer. I fastened the cork of a common atomizer to a test tube, inserted the latter in a vessel containing water of about 110°, let it warm and sprayed 1½ drachms of the solution of trypsin in intervals of fifteen minutes. After five applications one ounce of the solution of trypsin had dissolved 60 gr. (60 per cent) of fibrin.

Now for the papayotin. Its action on albumen is different from that of pepsin. In an acidulated solution of 1 per cent at a temperature of 105° it dissolved but little albumen but changed it into a fine pulp.

The present price of papayotin (Merk's) would not allow its use as a spray, at least not in the strength required (10 per cent) to produce some effect. Therefore I was obliged to use it with the brush. Fifty grains of a 10 per cent solution of trypsin applied to the fibrin (100 gr.) with a brush dissolved 50 gr. (50 per cent) of it, while a solution of papayotin of the same strength applied in the

same manner had no effect on the fibrin. I made the last experiment twice with the same result.

From these physio-chemical experiments it appears that trypsin is far superior to papayotin as a digestive of isolated fibrin; but whether their action is the same on the living tissue is to be decided by clinical observation. The experience of Dr. Jacobi, as well as two cases of diphtheria of my own treated with papayotin, seems to show that papayotin is not so inert when applied to the living tissue as when applied to isolated fibrin.

Nevertheless, trypsin seems to have so many advantages over papayotin that its use in cases of diphtheria should be tried. Besides its higher activity, it is the different ways in which it can be applied that recommends it. Its comparatively low price would allow one to use it in the form of a spray, which would be especially serviceable in cases of laryngeal or infra-laryngeal diphtheria, in so-called croup. Whether it will show any untoward effects which might prevent its use, can only be decided by close clinical observation.

NERVOUS DISEASES.

W. A. JONES, M. D., CHAIRMAN.

LOCALIZATION IN DISEASE.

Close study, accurate observation and rational experimentation, together with anatomical research, have opened wide the door to localization in nervous diseases. We do not as yet recognize all of the objects within the inner chamber. Some are familiar and others will improve upon acquaintance, provided we make the advance.

No exact basis has been established from which to work, but the time is approaching when we shall be able to definitely locate focal lesions in the nervous system. Men are devoting their best efforts to this work, and have already been rewarded with success. True, a great many errors of diagnosis have been reported, but they are simply exceptions to the general rule, and because every case does not correctly correspond with some of the ideas of eminent observers it is not to their discredit, but should stimulate us to more thorough work.

It is comparatively easy to locate lesions at the autopsy, but it is quite another thing to correctly diagnose and then verify the lesion on the table. Every physician should therefore contribute his observations and notes of autopsies in every available case, thereby benefitting himself as well as every one else interested in this branch of medical science.

According to Gowers, diseases of the nervous system are divided into three general classes, viz., organic, nutritive and functional. The last named however is entirely out of the field of my report, and, unfortunately, the name often hides the true nature of the case or serves as a cloak to conceal our ignorance. More attention should be paid to diseases of nutrition causing molecular change, although not clearly defined they may simulate organic diseases or gradually merge into such. Chorea, paralysis, agitans and general paralysis of the insane come under this head. It may be difficult to separate functional and nutritive disorders, but the line can be drawn in a great many of the diseases.

Our study at this time will be devoted entirely to organic and structural lesions. Ferrier, Meynert, Charcot, Westphal, Wernicke, Erb, Gowers, besides others in our own country have contributed very largely to the literature of localization. Often the same experiments have been performed by two or more observers at the same time, and the results have been almost identical, notably Huebner of Germany and Duret of France, in tracing the cerebral circulation in its minutiæ.

Comparative anatomy has proven a great deal; properly conducted experiments on the brains of monkeys and other animals a trifle lower down in the scale have helped build a foundation for more exact research. Repeated autopsies on man have shown lesions which produced certain symptoms, corresponding in location with special areas in the monkey, which when stimulated produced like symptoms.

The gray matter of the convolutions is the seat of intelligence, memory and reason. Certain divisions of the convolutions may preside over special functions, but for the proper performance of the intellect the different divisions must act as a unit as no one special area can act for another.

Yet you may say there are exceptions to this; true, there are exceptions. I can cite you cases where extensive destruction of the cortex has taken place without producing any marked intellectual changes except it be for a short time. We may suppose that the remaining and uninjured part of the brain does an extra amount of work, but if so, eventually troubles will ensue and the symptoms will point to the injured part, although many years have elapsed since the accident.

My friend, Dr. Woodling, reported to me a case in which a boy suffered from an extensive fracture of the skull over the parietal region with considerable loss of brain tissue, yet made a complete and rapid recovery without cerebral symptoms.

Usually acute lesions, as hemorrhages and softening, give rise to decided symptoms by destruction of tissue; but slow growths, tumors, chronic inflammations and the like, may exist for an indefinite time with scarcely subjective symptoms. The surrounding tissues are somewhat displaced and compressed but not destroyed. Such lesions are frequently found in the insane with no symptoms of a paralytic form. Numerous cases of chronic meningitis with occasional symptoms such as headache are walking our streets daily.

The anterior or frontal lobe may be the seat of special functions, but none have been clearly defined. When a lesion of slow growth occurs in this part of the brain, the symptoms are usually of a mental character, although the same disease of the convolutions in the occipital lobes may cause similar symptoms. Melancholy, confusion of ideas and emotional disturbances are usually manifested. An acute lesion will cause convulsions, and at times, paralysis.

CASE II.—Man, 38, syphilis. Was depressed and emotional for more than two months. Ten days before his death had a series of convulsions lasting twelve hours, no

remaining paralysis; following day was up and about as usual; one week later had a second series which lasted nearly a week, the convulsive movements scarcely ceasing. Hemiplegia of the right side of the body. Autopsy revealed a tumor, syphilitic gumma over the second right frontal and encroached upon the ascending frontal convolution. According to our theory this would account for the state of melancholy. Over the left frontal convolutions and a part of the ascending frontal we find an area of softening which accounted for the convulsions and paralysis.

CASE III.—Cerebral abscess from syphilis involving the right frontal lobe. The patient had occasional convulsions at rather long intervals, partial paralysis of the 3d N. on the right side from compression. No paralysis of the face or body, but was much depressed and emotional.

I have also seen atrophy of the frontal convolutions in chronic melancholia without paralysis. I think these cases will bear out the theory that lesions of the frontal lobes are apt to cause mental symptoms.

The third frontal convolution on the left side in right handed, and vice versa in left handed people, is undoubtedly the speech center, as numerous cases have sufficiently proven. The island of Reil has no special function, but as it is so intimately connected with Broca's convolutions, disease of this insula would produce paraphasia.

The motor area of the cortex is somewhat triangular in shape with its base at the longitudinal fissure and its apex at the fissure of Sylvius. It embraces the ascending frontal and parietal convolutions (separated by the fissure of Rolando) and the superior parietal lobule located immediately behind the upper extremity of the ascending parietal convolution.

The leg center is at the upper and posterior part of the triangle. The arm center is anterior and a trifle below and covers a greater part of the ascending frontal and a

smaller portion of the ascending parietal convolutions. The center for rotary movements of the upper extremity is below the arm center and anterior to the fissure of Rolando. Still below the arm center and in close proximity to the fissure of Rolando is the face center, and below it and bordering on the fissure of Sylvius is the center for the lips and tongue.

It is seldom that one area is alone involved, and when more than one are implicated one suffers more than the other. We are often assisted in our diagnosis by watching the progress or disappearance of symptoms referrable to certain areas.

CASE IV.—Seen with Dr. Frank Burton. Mrs. K., injured by a fall on right side of head over parietal region. Symptoms: Paralysis of arm and face of the same side of body; diagnosed lesion by contre-coup. Autopsy showed clot over arm and face center of left hemisphere.

The inferior parietal lobule and angular gyrus preside over sensation and occasionally vision, but only when the lesion is extensive do we find these symptoms. The three divisions of the occipital lobe, with its annectate convolutions, are supposed to be the seat of vision, but in all probability it only comprises a portion of the lobe, and is more largely formed by the cuneus.

The first and second convolutions of the temporal lobe on the left side (?) preside over hearing and smell. Softening at this point is likely to produce sensory aphasia and bilateral anosmia, while chronic meningeal inflammations cause roaring, crackling and creaking sounds in the temporal region.

Extensive lesions in the centrum ovale, softening of the external capsule or gray matter in the neighborhood of the island of Reil, cystic formations in either extremity of the corpora striata, do not necessarily cause symptoms except by compressing the internal capsule. They may

be present and cause no compression, and are never diagnosed.

The most important part of the ganglia with which we have to deal is the internal capsule, made up of bands of fibres, some of which are special, others are sensory, while the larger portion are motor. This capsule, elbow in shape, situated as it is between the optic thalamus and lenticular nucleus in its posterior extremity, the two divisions of the corpora striata in its anterior, is the most frequent seat of cerebral hemorrhage; the left side more often than the right, on account of the more direct line of the circulation.

The middle cerebral artery, lying in the fissure of Sylvius, supplies the larger part of the sensori-motor area and its branches, the lenticulo-striati and the lenticulo-optic, the basal ganglia but more particularly the internal capsule. The former artery is most apt to rupture, and in so doing destroys that portion of the capsule which is made up of pyramidal fibres from the motor regions of the spinal cord.

The lesion may be very small, only catching a few of the fibres, which will cause paralysis of one limb, monoplegia. Degeneration of these fibres in the motor bundle is found in hemichorea and hemiathetosis. Usually a larger part of the capsule is involved, and complete hemiplegia of the opposite side of the body is the result.

A lesion of the anterior exremity may not cause paralysis, but if the bend or knee be the seat of the lesion we have facial paralysis. If lower down, the fibres going to the leg and arm are caught. When complete hemiplegia occurs, often one or more of the paralyzed parts recover, leaving paralysis and contraction of that part in which the motor fibres are destroyed, while those which are compressed regain their control.

Contractions almost invariably accompany lesions in

the capsule but are rarely present in cortical lesions, and in the latter the memory of initiated movements is abolished, while in lesions of the tract the memory of such movements may remain but the power to produce them is gone. If the capsular lesion be extensive, anæsthesia accompanies the motor hemiplegia.

Anæsthesia alone is due to lesions midway in the posterior end of the capsule. Hemianopsia may and often does accompany anæsthesia, for at this point, the posterior extremity of the capsule, the optic fasiculi of Gratiolet pass through the capsule from the optic tract on the same side to their termination in the occipital lobes.

Still further down in the capsule the auditory and possibly the hypoglossal fibres cross from the temporal lobe on the way to their respective nuclei in the floor of the medulla; therefore destruction or compression of these fibres will cause disturbances of hearing and smell (?) usually transient.

Lesions of the optic thalamus may give rise to anæsthesia and ocular troubles, but usually when near the surface, and then by compression of the capsule. Latest researches have shown that this body is not the seat of sensation, but is secondary to the sensory areas in the cortex, just as the corpora striata is secondary to the cortical motor centres. Voluntary and habituated movements originate in the gray matter of the convolutions, but involuntary and protective acts have the assistance of the basal ganglia.

The quadrigeminal and geniculate bodies are rarely alone diseased. It is very difficult to diagnose lesions here, as the ocular defects may be caused by lesions elsewhere.

Hemorrhage into the ventricular cavities produces profound coma and death in a short time, and if paralysis is present it is usually masked by the coma.

Diseases of the base of the brain can be diagnosed from

the individual cranial nerve symptoms. Thus a lesion of the crura cerebri will cause paralysis of the opposite side of the body and of the 3d N. on the same side if its fibres are involved.

Lesions of the pons are diagnosed from the manner in which the facial paralysis makes its appearance. Should the lesion be above the origin of the 5th N., it might be almost anywhere in the tract above.

In diseases of the medulla the symptoms are usually bilateral, sclerosis causing bulbar symptoms, or descending degeneration of the pyramids causing general motor paralysis of the body.

Sclerosis on the floor of the fourth ventricle may give rise to diabetes or albuminuria; hemorrhages usually involve the nuclei of the pneumogastric, thereby causing cardiac and respiratory disturbances followed by death. A comparatively large hemorrhage will cause death in a few moments, while with a small hemorrhage the patient may live for an hour or more.

I recently saw such a case in which a small lesion occurred. The patient experienced some slight convulsive movements, gasping and difficult respiration, with coma and death in an hour. The autopsy showed two small hemorrhagic spots just above the nuclei of the pneumogastric.

Lesions in the lateral halves of the cerebellum do not produce characteristic symptoms. When at the base and near the medulla we may expect incomplete motor paralysis on the opposite side of the body and not of the face; headache, vomiting, opisthotonos and optic neuritis strengthen the diagnosis. If the lesion involve the lateral peduncle the patient will rotate or turn toward the side of the lesion.

Lesions of the middle lobe or vermis may be positively recognized during life. With the other symptoms enumerated we have a loss of equilibrium when attempting to

rise or walk—rotatory vertigo. The walk is not that of an ataxic person, no stamping of the heel, only a staggering; neither do we have the other characteristic symptoms of ataxia.

The spinal cord is divided into various tracts or colums which may be the seat of disease limited to one or associated with disease in other parts.

Disease of the direct pyramidal tract of Turck may cause motor paralysis of the same side of the body, but such cases are extremely rare and are usually associated with disease of the crossed pyramidal tracts proper. A disease of this crossed pyramidal tract causes motor paralysis of the opposite side, and as the lateral columns are invaded, we have the characteristic spastic gait. If the lateral columns are alone involved, the motor paralysis is less prominent until the later stages.

In locomotor ataxia the disease is confined largely to the posterior external or columns of Burdach, but as the disease progresses the columns of Goll are invaded. When the columns of Goll are alone diseased we have ascending sensory paralysis, but this is very rare.

Ataxic paraplegia is a rare and interesting disease. The symptoms are those characterized by a lesion of the lateral columns compressing the posterior gray roots. The symptoms are spastic gait, exaggerated tendon reflex, girdle sensation, inco ordination of movement especially when the eyes are closed. Very little loss of or delayed sensation, and no motor weakness nor trophic disturbances. I had the pleasure of seeing such a case recently with Drs. Woodward and Hunter.

Diseases of the anterior horns of gray matter are characterized by motor paralysis, atrophy of muscles and other trophic symptoms, such as are found in infantile spinal paralysis and other forms of polyomyelitis and the late stages of tabes dorsalis.

Occasionally diseases are limited to the direct cere-

bellar tract, but are usually associated with cerebellar disease. Lesions of the internal capsule when destruction of fibres have taken place can be traced down to the extreme end of the cord, particularly when the motor tracts are implicated.

I cannot leave this subject without referring to the recent strides made in cranio-cerebral topography. The late journals have contained many interesting articles on this subject in which operations have been performed for the relief of cerebral abscess and the removal of morbid growths.

The rules laid down properly belong to surgery, and are consequently out of our domain. From the standpoint of a neurologist we look upon it as bearing out the localization of the different centres in the cerebrum, and cases are brought forward to prove the existence of such centres.

I am conscious of the fact that I have iutroduced nothing particularly new in my report. My own individual cases and observations have made the subject of localization of great interest, and I can only hope that the members of this Society will be stimulated to advance the cause.

REPORT OF CASE.

A. T. CONLEY, M. D.

I will report briefly a peculiar case which I suppose would be classed among the neuroses. The patient is a little Swede girl, six years old, whom I was first called to see on the morning of the 17th of January last, two miles in the country. On the way the father of

the child gave me the following history: Early in the morning he heard the child moaning in a low peculiar way; on going to her he found he could not arouse her; she could not speak or open the eyes, but could move the arms and limbs slightly, though unable to stand or sit up.

When I arrived the child was awake and all right. I could find nothing at all the matter. I concluded the parents had been frightened at nothing, and thought no more of the case until five days later I was called again in the morning, and this time I found the patient in the condition described by the father.

I examined the child carefully, took her out of the bed, repeatedly raised the upper lid of the eye to examine the pupil. She seemed uneasy and resisted the opening of the eye. I could see nothing wrong, and had she not been so young should certainly have thought she was shamming. Suddenly we made the discovery that she was awake, and looked as fresh as a child just waking up in the morning. I left a mild corrective for the stomach and went home only to be called again in about a week.

It now occurred to me to lift the lids of the eyes as I did before; this I did every minute or two; this was resisted stoutly by the eye, but in the course of ten or fifteen minutes she could hold them open, and began to talk. This was about two o'clock in the afternoon, and she had laid in this hypnotic state all day.

Sometime during the forenoon a new symptom had appeared: this was persistent hiccough, and this continued after she was herself again—she passed no water from the night before until after waking up after two o'clock the day following—the hiccough persisted almost continually for two days; all common remedies failed; six and ten drops of chloroform given internally had no effect. The hiccough finally became so distressing that I gave her a pretty full dose of morphine, and that had the desired

effect; but it came back in a day or two, when I prepared a solution of valerinate of morphia with directions to give whenever the hiccough began. This always acted promptly, but had to be given occasionally for six or eight weeks. I also gave the child for a time potass. bromide, and then put her upon iron and strychnia, and she slowly improved, yet every few days the parents would find her in this peculiar hypnotic state, but by forcibly raising the eyelids she would soon talk and be herself again.

I requested her parents to talk with her about her feelings when in this condition. From all I could gather she had no peculiar sensations, only she could not open the eyes, speak or move, though perfectly conscious, though from so young a child nothing so very definite could be learned. She is one of a family of seven children, the oldest not being over twelve or thirteen years old. There is no history of any nervous disorder in the family, though the grandmother on the mother's side claims to have had the same kind of trouble when she was a little girl, and was cured (?) by drinking her fathers and mother's blood mixed with some of her own. This remedy the parents were anxious to try, and though I ridiculed the idea and tried to show them the absurdity of it, yet I have no doubt they have tried it unknown to me, and as the child is now seemingly nearly or quite well, I presume the parents believe in the blood cure.

My only object in reporting this case is the fact that I never saw anything like it, and get little light on it from the books. If it is considered worth discussion, I should like the opinions of our medical brethren.

SOME PATHOLOGICAL POINTS ON CARCINOMA.

A. SHIMONEK, M. D.

When we commence the consideration of cancer, its nature, origin, structure and causation, we enter upon a very obscure but exceedingly interesting and important pathological field. A morbid process which was known to the oldest of physicians, one which the laity know so much about and dread more than any malady that can befall man, one about which there has been a great deal of speculation among pathologists, and one in which therapeutics are totally helpless and even surgery in the great majority of cases can only relieve and prolong life.

A carcinoma may be defined as a tumor consisting of epithelial cells irregularly arranged without intercellular substance, in an alveolar stroma of fibrous or fully perfected connective tissue.

Now in order to correctly interpret this definition let us see what we class under the head of tumors. There have been a great many varieties of new formations called tumors by different pathologists according as they believed them to originate, either from hyperplastic or imflammatory processes, or from a root of embryonic tissue. The hyperplastic theory classes all overgrowth of tissue which are due to increased textural changes, or hypernutrition without a corresponding physiological function, as tumors. We might at first be inclined to regard a tumor as a result of overgrowth of tissue, and look for the condition of its development among those which determine ordinary hyperplasia; but facts soon appear which tend to show that the processes are not parallel.

There is first in hyperplasia or numerical hyperthrophy, which is one and the same thing, an increase in volume by an increase of the histological elements which corresponds in every respect to the tissue in which it occurs; secondly there are no atypical cells, and thirdly there is not the impairment or extinction of physiological function, consequently these anatomical facts are entirely against classifying any tumors under localized hyperplasias. Neither can we compare tumors with any inflammatory new formations. They may certainly, many times, show the presence of inflammatory products, but when thoroughly analyzed these show themselves to be due only to secondary conditions, produced most frequently by mechanical pressure of the tumor elements on surrounding tissue.

Conheim has quite recently propounded the embryonic hypothesis, which, I think, is adopted by almost all pathologists as the true origin of tumors. In order to illustrate precisely what he means, let me consider briefly a few points in embryology. You are well aware of the separation or division of the blastodermic membrane in the early development of the embryo into three parts, from which the great variety of histological elements are derived. They are the external germinal plate, the middle germinal plate and the internal germinal plate, or as some authors name them the epiblast, mesoblast and hypoblast. The epiblast gives rise to the origin to all of the epithelial tissue which clothes the body, besides the nerve centers, including the brain and the spinal cord; from the mesoblast comes that extensive tissue classed under the connective tissue group of tissues, beside many important organs; the hypoblast forms again the epithelium on the interior of the body. We see then that all of the histological elements are derived from these three germinal plates, and according to recent investigation the

morbid tissue entering into the composition of the tumors is as well derived from the same.

Conheim defined tumor as a circumscribed atypical production of tissue from a matrix of superabundant or erratic deposit of embryonic elements. This shows then that a tumor is the result of tissue proliferation from an embryonal root originating from the epiblast, mesoblast or hypoblast. This fixes the situation of a tumor and shows its growth invariably to be a matrix of pre-existing latent embryonic tissue. We have many examples which prove beyond a doubt the above theory of the origin of tumors both malignant and benign. For instance, let us consider the origin of the quite frequent growth, the dermoid cyst. Certain organs up to the time of puberty remain to a certain extent in an inactive state, and do not keep up with the growth of the body, but when the stage of puberty arrives the genital organs and skin are stimulated, which cause increased textural changes. Now if during embryonal development there occurs some error in the distribution of the epiblast, as a displacement beneath the other germinal plates, the tissue originating from it remains the same as when in its normal physiological boundary, but here the epithelial tissue is out of place, and by the development of the tissue from the other layers this tissue becomes constricted, causing the growth of the great variety of epithelioid substance so characteristic of dermoid cyst. Here then we find that the origin of this growth has been in a matrix of pre-existing latent embryonic tissue.

We cannot look upon tumors as new formations for they invariably grow and develop from pre-existing tissue elements. In the dermoid cyst we do not find heterologous structure, but find exactly those tissues which grow from the external germinal plate, and the case is the same with all other growths. The tumor is an integral part of

the body. The matrix is implanted in the embryo; the cells composing it do not take any action in the normal physiological function of the part but remain in a latent and inactive state, and are simply awaiting a favorable opportunity to develop themselves into some kind of a growth. When a tumor, either benign or malignant, grows from such root its cellular elements are always atypical.

What has been said of the origin of tumors is applied also to the carcinoma. The essential distinguishing feature of this growth is the cell which composes it being always one or another variety of the epithelial cells, having sprung from a pre-existing embryonic element originating either from the external or internal germinal plate. Waldeyer, Virchow and some other authorities maintain that cancer can also originate from the middle germinal plate or from connective tissue, but Conheim's theory completely overrules that idea by proving that when the cancer originates from localities where epithelium is not normally found it is always due to the displacement of either the epiblast or hypoblast thus forming such root merely by an anatomical error in embryonic life.

We must not confound all tumors which are made up of epithelial cells as carcinomata, no more than all tumors consisting of connective tissue are sarcomæ. There is a great difference between the peculiar arrangement of the cells and their characteristics. One may be perfectly harmless or benign and the other malignant or deadly, though they may both have for their elements epithelial cells. Simple non-typical genesis of epithelial cells is not uncommonly found, but they can by no means be classed as carcinomata; for instance, in the formation of fibromas of glands the spherical epithelial cells begin to multiply and form into epithelial masses that are altogether

non-typical in appearance, but they lack the property of growing indefinitely and infiltrating the surrounding tissue, and remain as tumors which show no sign of recurrence when totally removed.

Again, the difference between an epithelioma and a papilloma lies simply in this, that in the former growth the epithelial cells exist where they have no legitimate business, that is, the atypical cells having sprung from the matrix of pre-existing embryonic cells, have as a result of a certain stimulus grown so rapidly that a decided proliferation has taken place out of their natural physiological limits, and thus invading and infiltrating a new territory and causing destruction to normal tissue just in proportion to the rapidity of the formation of the cells.

On the other hand, in the papilloma we find the reverse condition of things. Notwithstanding that the tumor consists of epithelial cells, and that they have originated from a root probably just the same to all appearances from which the former growth arose, yet owing to the fact that its cells are modest, do not possess grasping properties, but are perfectly contented to remain within the limits which nature allowed to them, only growing more rapid than natural and thus the tumor remains benign just so long as there is no relation between the cells and its underlying tissue.

From these facts it is perfectly proper to speak of a stage of non-malignancy of a cancer notwithstanding even of its very name. While it is not usually difficult to diagnose a cancer after it has fully developed, our knowledge of its non-malignant stage or even the stage when atypical cells are in their beginning of invasion and infiltration are lamentably deficient; but I do really believe that some day the stage of non-malignancy will be made out and then and not before will come the great revolution in the treatment of these growths.

The stroma in which the epithelial cells are imbedded, is to a certain extent formed from pre-existing connective tissue, although the great portion is newly formed as a result of irritation of the connective tissue, produced by infiltration of epithelial cells. The quantity of the stroma varies considerably, being much more abundant in some cancers than in others, it is usually so arranged so as to form alveoli of various sizes communicating with one another to form a sort of a cavernous system. The cells constituting the stroma are not always fully perfected connective tissue cells or fibres, but differ in size, shape and characteristics incident to various stages of developments of this cell, according as the cancer is either rapid or slow in growth. Within the stroma are imbedded the blood vessels, these being often very abundant, forming a regular network. They are limited to the stroma and only seldom encroach upon the alveoli. This is quite a distinguishing feature from the sarcomæ in which the blood vessels ramify between the cells.

Now let me consider briefly some conditions which may cause a carcinoma to develop. It was and is now to some extent believed that the processes of inflammation may be the direct causation of cancer. I deny, in toto, the possibility of this pathological condition, per se, entering into the production of cancer without the presence of any other condition. It may, to be sure, act as one of the exciting causes. If we consider that at a given point there is during embryonal development more epithelial cells produced than can be physiologically appropriated by the tissue, then the excessive irritation of the cells, the increased blood supply and the decrease in the normal physiological resistance of surrounding tissue, which latter condition enters greatly into the production of malignancy, may and will produce all the conditions necessary to the development and growth of cancer. But

without the above circumstances nothing but the usual consequences of inflammation are its results.

Although traumatism is claimed to be the cause of a certain percentage of cancers, yet we cannot look upon it in any other light than one of the exciting causes, by producing, as a result of a stimulus, those morbid conditions favorable to the development of the latent embryonal cells which forms the matrix for the tumor.

Whatever the exciting or predisposing cause of a carcinoma may be, I would class hereditary predisposition as the most important element in its production, from the fact that a child is invariably born with the matrix from which this growth springs. It is a well recognized fact that both malignant and non-malignant tumors can be traced from one generation to another. Of course this predisposition does not mean that the tumor itself is hereditary, but merely the embryological error is all that is congenitally necessary to be transmitted from parent to child; in other words, it is the root or matrix which is hereditary, and that alone with favorable surrounding circumstances, such as traumatism, inflammation and all conditions which alter circulation—textural changes impair nutrition or decrease the normal physiological resistance in tissue—will cause the development of carcinoma.

Since the micro-organism has been held responsible for almost all ailments that human flesh is heir to, it of course has been also put down as one of the important causes of cancer as well as all other growths, both benign and malignant; but being true to our theory of cancer and holding that an indispensibility to its development is the matrix of embryonic cells, therefore, even if the bacteria plays any part in the production of this growth, it merely does so by acting as any other stimulus or irritation in the immediate vicinity of such root, or as an exciting cause.

In regard to the most frequent location of the cancer, it may be said that as a rule they are most frequently met with in localities where during the devopment of embryonal life the most complex cellular growth occurs. This complicated histogenesis is observed at the junction of mucus membranes with the skin, a point in the embryo where we find the greatest blending of tissue arising from the three germinal plates, and where for this very reason it can be well understood. An anatomical error of distribution of the epiblast or hypoblast can easily take place and produce thus a matrix from which subsequently a carcinoma may start.

REPORT ON THE PROGRESS

OF

OPHTHALMOLOGY AND OTOLOGY.

C. J. SPRATT, M. D.

Agreeable to the usual custom, we shall confine our remarks to what appears in the light of new discoveries, progress and advancements in the field of Ophthalmology and Otology.

It is often difficult in our profession to decide whether what is claimed as a new discovery or advancement is really such. Within the short period of a year much that is immature is presented, and we are ever in the position of the maidens of the past whose occupation was to separate the grain from the chaff.

This is no compliment to the vast array of medical literature presented to the profession, but when one remembers the number of "cure-alls" presented to us through obscure medical journals and equally unknown writers, one feels it is time to call a halt.

During the past year there have been no startling innovations in this department, but rather a proving, if I may be allowed the term, of some of the theories of the past, and a demonstration of the fallacy of others.

We shall not presume to present to you a resume of all

that has appeared in this department during the past twelve months, but rather call attention to what to us appears most practicable.

Antiseptic eye surgery has been a fruitful field of investigation during the past months. While on the Continent the beneficial effects of antiseptics has been almost universally recognized for the past four years, there have been and still are in this country those who damn it with faint praise, or wholly repudiate its use in ophthalmic and general surgery.

In former years the loss from suppurative processes after cataract operations averaged from three to six per cent. With strict antisepsis the above rate has been reduced by all operators, and in some cases to one-half of one per cent.

It is but a few years since Alfred von Graefe published one hundred and sixty-seven consecutive cataract operations without loss from suppuration. The statement was received with incredulity by many who are the strongest advocates at this time of antiseptics. A recent French author has reported three hundred operations for cataract without purulent infiltration of the cornea.

The number of facts that have accumulated to substantiate the advantage of antisepsis in ophthalmic and general surgery is too great to be thrown aside, and those who deny its utility are blind to proof; but it is true, too true, there are those in the Northwest who deny that micro-organisms are the cause of suppuration, and their field of operation can be marked out by the death certificates inscribed "pyæmia" and "septicæmia."

Prof. Herman Knapp, of New York, published in the Archives of Ophthalmology of 1886 the results of a series of experiments undertaken to demonstrate the difference in the process of healing in a wound non-infected and one infected with known pyogenic micro-organisms. While in Berlin during the winter of 1885, at Koch's laboratory,

the above experiments were undertaken. His method of procedure was essentially as follows:

Selecting healthy rabbits, both eyes of each animal were subjected to the same amount of traumatism; the one eye with aseptic precautions, the other was infected with known micro-organisms. In the first four experiments the one eye was inoculated with a non-pyogenic fungus, namely, that of pink yeast. The process of healing was the same in both eyes of each of the four rabbits.

Twenty more animals were treated as the above mentioned four, with the exception that one eye in each case was infected with the following varieties of micro-organisms: Staphylococcus pyogens and the micrococcus of osteo-myelitis. The operations performed were the following: Discisions, sections through cornea, iris and lens, corneal sections, extractions of the lens, punctures of the cornea, and strabismus operations. In seventeen of these cases the eye infected was lost by a purulent process, while its fellow recovered in every case without the formation of pus or the development of any unfavorable symptoms.

Prof. J. Michel, of Wurzburg, published in the Archiv fur Augenheilkunde, Vol. XVI, Nos. 3 and 4, a lengthy paper, claiming to have discovered the micro-organism that is the cause of purulent ophthalmia and trachoma. If his results are proven by others, it adds one more of the diseases due to the microbe.

At Aschaffenburg, in Lower Franconia, an epidemic of acute purulent blenorrhœa developed in an orphan asylum. Michel was delegated by the government to examine and report on the disease. In the institution there were 97 inmates, of whom 67 contracted the disease. In many of those affected the secretions were removed from the conjuntival sacs, strained and placed under examination, the results being negative.

Another series of experiments was made in which the contents of the follicle were used, as well as the excised follicles themselves. Cultures were made in the usual manner from the squeezed-out contents of the follicles. From the cultures he inoculated the conjunctiva of rabbits, with negative results. He then inoculated the human conjunctiva and the result was a follicular conjunctivitis. The excised follicles showed the same micro-organisms on section and by cultures as in the original case. From these examinations he thinks there can be no doubt that trachoma is due to a microbe.

Morphologically it consists of a diplococcus appearing as two segments of a ball, resembling the gonococcus of Nesser, but much smaller and different in this important particular, that the line of separation between the two segments is much finer than in the former. The microbe also show an inclination to group in masses.

Dr. J. E. Weeks, Resident Assistant to the New York Ophthalmic and Aural Institute, has further shown that acute catarrhal conjunctivitis is due to the presence of a particular bacillus. He inoculated eleven patients with from the fifth to the eleventh generation. In each case inoculated typical catarrhal conjunctivitis followed, and the secretions showed, both microscopically and by cultivations, the same variety of bacilli as the original culture.

In 1877 Michel, now of Wurtzburg, published a paper in the Klinische Monatsblatter recommending passive motion in obstinate cases of paralysis of the ocular muscles. Owing to the severe pain caused it passed into disuse, or perhaps more properly, never became universally recognized.

During the past year the method has been revived by Dr. James Spalding, of Portland, Maine, and the introduction of cocaine as a local anæsthetic has made the treatment available. It should not be used in the early stage, but seems to be more applicable at a later period

of the disease. Under the use of diaphoretics, alteratives, nerve tonics, electricity, both galvanic and faradic, the result is often unsatisfactory. With orthopœdic treatment secondary contraction is averted, and cases that have proved obstinate to treatment for months under the former methods have yielded within a few days.

At the time Dr. Spalding's paper appeared we had under our care three cases of paralysis of the extrinsic muscles. All recovered rapidly under passive motion, though they had been under treatment some weeks before with but slight improvement. In our opinion the results will not be satisfactory in cases due to cerebral disease, but rather those due to peripheral lesions.

The method of procedure is as follows: After the eye is anæsthetized with cocaine the lids are separated with the eye speculum, the conjunctiva is grasped with fixation forceps over the insertion of the paralyzed muscle. The eye is now rotated as far as possible in the line of contraction of the muscle paralyzed, then as far as possible in the line of its extension; in other words, if it be the rectus internus or externus, rotate the eye as far as possible toward the internal and external canthus.

In our cases we have rotated the eye about one hundred times at each treatment occupying two or three minutes, repeating the same daily at first, then every second day. In each case the improvement has been marked within the first ten days.

One swallow does not make a summer, but the three cases of Dr. S., five cases by Dr. Alt of St. Louis, and the three cases treated by us, lead us to hope that many of these patients will not remain permanent sufferers from diplopia and the accompanying personal disfigurement.

The use of massage to clear the cornea of obstinate opacities has rapidly gained favor. Dr. Dantzuger, in the Deutsch Medizinatzeitung, 1886, contributed an exhaust-

ive paper on this subject. Massage is applicable in case of opacity due to severe corneal abrasions, keralitis parenchymatosia in the stage of decline, or any opacity due to inflammatory action after the acute stage has passed.

The method is the following: A small amount of some slightly irritating ointment is applied to the cornea—probably as good as any is a one per cent of yellow oxide of mercury—the eye is closed and the finger placed upon the upper lid, and gentle massage is practiced for one or two minutes. The pressure on the globe should not be sufficient to produce the least pain. This should be repeated daily for a considerable length of time, though I have seen excellent results when the patient has performed the massage himself.

While speaking of massage, permit me to mention another disease in which it proves highly satisfactory, namely, episcleritis, a disease that often persists from four to ten weeks, but with methodical treatment by massage usually recovers in from seven to fourteen days.

Electrolysis in partial trichiasis uncomplicated with entropium is much more satisfactory and yields more favorable results than any other procedure. The object is to destroy the hair follicle and thereby prevent the growth of the cilia.

The method of operating is as follows: A delicate needle is placed in an electrode, which is connected with the negative pole of the ordinary galvanic battery. The needle is now introduced along the side of the cilia until the follicle is reached; the positive pole is connected with any part of the body, but preferably some part of the face or neck. From three to five cells will be necessary to destroy the follicle, and the time consumed with each cilia is about twenty seconds. From 10 to 25 per cent of these will return, according to the technique of the operator.

Grathnege, in the Vien. Med. Blatter, 1886, No. 17, describes a new operation for blindness caused by corneal opacity complicated with leucoma and staphyloma.

The operation is as follows: First is prepared a glass shell similar to the ordinary glass eye, except through the center is an opening; to the opening on the posterior surface of the shell is attached a glass tube three or four lines in length and one and one-half or two lines in diameter. Now through the center of the cornea two incisions are made, one in the vertical, the other in the horizontal meridians, and of sufficient length to permit the entrance of the before-described tube into the eye. The four triangular flaps formed by the incisions are pressed backward into the eye, the glass shell and tube is retained in position by the lids the same as the ordinary glass eye. By this means vision has been restored and much improved by the use of proper glasses.

While this operation without doubt temporarily has restored sight, we fear it will not be of permanent benefit, but the vision recovered will be lost by a subsequent opacity of the vitreous due to a hyalitis.

There has been but slight change in the treatment of diseases of the ear during the past year. As you are well aware, Dr. Schade, chief surgeon of the Hamburg General Hospital, reported a case in 1885 of abscess of the brain consecutive to mastoid disease, cured by operation. Previous to this there had been but one operation of this kind performed. Schondorff was the operator, and his case recovered in three months. Since Schade's, in 1885, there have been ten cases reported, with favorable termination in three of the ten.

There is no doubt but we have reached a new era in cerebral surgery, and as this subject has been thoroughly discussed in the medical journals of the past year, we will not consume needless time.

In conclusion, permit me to call your attention to a procedure of Prof. Berthold, of Koenigsberg, for closing perforations in the membrana tympani. Its simplicity commends itself to all, and the results so far have proved most satisfactory.

The method of procedure is the following: First the middle ear must be relieved of all discharge. If there is no secretion, so much the better. A portion of the vitelline membrane of the hen's egg (the skin lining of the eggshell) is taken up with a curved drop tube. If slight pressure on the rubber bulb is made and then removed, the membrane will remain attached to the tube. The vitelline membrane is now trimmed so it is slightly larger than the perforation in the membrana tympani. It is now carried into position and slight pressure made on the rubber bulb of the drop tube. The adhesive quality of the membrane will cause it to adhere to the margin of the perforation. It has remained in contact for months, but the author has not been able to verify whether it really is vitalized or not, but that it assumes the color and appearance of ordinary cicatricial healing of the membrana tympani leads him to the opinion that vitalization has really occurred.

NECROLOGY.

S. B. SHEARDOWN, CHAIRMAN.

During the past year death has invaded our ranks and removed two of our old associates, Dr. H. L. Coon, of Northfield, and Dr. P. A. Heitz, of St. Paul. We are thus admonished that in spite of our efforts to mitigate and cure disease the time will come to us all when we must succumb to the inevitable.

DR. H. L. COON.

Dr. Coon was born in Grafton, N. Y., August 25th, 1828. His early life was spent in Alfred, N. Y., and in 1840 the family removed to Milton, Wis. There he attended Milton Academy. He studied with a cousin, Dr. Head, then entered and graduated at Rush Medical College. He afterwards took courses of lectures—two in Chicago and one in New York. He married Sarah Morton in 1856, and began practice in Rutland, Wis. He spent a winter in Iowa, two years in Austin, Minn., a year or two in Faribault, and came to Northfield in 1861. Here he was a successful physician to the close of his life. He never ceased to be a student in his profession, ever seeking higher attainments, and became distinguished especially in surgery.

Dr. Coon was the first president of the Rice County Medical Society, also of the Cannon Valley Medical Society, and for twenty-five years was an honored and

successful practitioner of Rice County. He was also a member of the American Medical Association. Dr. Coon became a member of the Minnesota State Medical Society in 1872. He was one of its most regular attendants, and one of its most ardent and enthusiastic workers. He died on the 16th of October, 1887, of pleuro-pneumonia. "Peace to his ashes."

P. A. HEITZ.

Dr. Heitz was comparatively a new member of our Society, his membership dating from 1883. For the short time he had been a member of the Society he had made a very favorable impression upon its members. He was well calculated to make friends. He was a genial, pleasant gentleman of the old school.

Dr. Heitz was born in Germany, February 12th, 1820. He acquired his education in his native country and graduated with the degree of M. D. from the University of Heidelberg in 1846. He practiced there until coming to this country in 1847. He located at Malta, Ohio. He remained here one year, when he removed to Hannibal, Mo. Here he remained until July, 1880, when he removed to Hastings, Minn., where he practiced until Oct. 15th, 1887. He then took up his residence in St. Paul and opened an office on Dayton's Bluff. In June of this year he had a stroke of paralysis, from which he did not fully recover. He was ailing from this time until his death, which occurred on the 9th of April, 1888. Dr. Heitz died from a complication of diseases of the liver and stomach of a cancerous nature. Dr. Heitz leaves an aged wife, now located at Grand Forks, D. T. Verily a good man has gone to his reward.

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C. A. WHEATON,	1888–1889

ROSTER.

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THE NEXT MEETING OF THE SOCIETY

WILL BE HELD AT

MINNEAPOLIS,

On the THIRD THURSDAY OF JUNE, 1889.

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